AN ACTION RESEARCH STUDY OF THE IMPACT OF PROFESSIONAL DEVELOPMENT ON UNIT PLANNING AND CURRICULUM ALIGNMENT: AT THE MIDDLE SCHOOL LEVEL

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ABSTRACT

This action research study of teacher instructional planning and professional development was conducted using qualitative and quantitative data in the needs assessment, Iteration 1 and 2. The purpose of the needs assessment was to uncover teacher perspectives regarding instructional common planning time and unit planning and teacher behaviors at the building, department, and district level in order to inform the intervention iterations. Iteration 1 and 2 focused on determining if "Understanding by Design" (UbD) framework affected teacher unit planning instructional practices at the building level. The UbD framework was based on the Marzano Unit Planning Rubric and applicable checklist. Through the professional development intervention framework (Cooper, 2009), the coach-researcher worked alongside teachers in both iterations when developing a unit of study aligned to curriculum standards. Teachers in both iterations indicated the professional development intervention and the Understanding by Design framework positively influenced their unit planning instructional practices and transformed their planning thinking. The findings indicate the importance of understanding teacher instructional challenges to inform the improvement of instructional planning professional development. In addition, the findings suggest the Understanding by Design framework was an effective tool in improving teacher unit planning instructional practice at the building level.

Keywords: Understanding by Design, transformative learning theory, professional development, common planning time, coaching, Action Research.

To my beautiful family: My husband Kosta, for your love, patience and support throughout my entire educational journey, I could not have done this without you. To my beautiful sons, Yiorgo and Aristotle, I hope you always aim high and know there is nothing you cannot achieve without hard work and dedication – I love you two immeasurably.

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CHAPTER I: INTRODUCTION

This action research study was designed to explore how suburban middle school content teachers use planning time, and if they incorporated curriculum components when planning units of study. The professional development intervention included instructional planning strategies and supports designed to increase teachers' abilities to identify starting points for their teaching, outline the sequence of activities and assessments, and align daily lessons and unit plan of study to curriculum standards using the Understanding by Design framework (Wiggins & McTighe, 2005). The study included two concurrent iterations with different groups over an extended time making applicable modifications to each intervention based on the findings of the needs assessment and collaborative reflective feedback from teacher-participants.

Weiss, Banilower, and Shimkus, (2004), indicated the need for effective professional development sustained over time with continuous teacher reflection and feedback. In an era of high stakes assessment and standards-based educational reform, the need for high quality professional development emerged as one of the most important areas for research in education (American Association for the Advancement of Science, 1993; Borko, 2004; National Staff Development Council, 2001).

Most professional development misses the mark. One-time workshops are the most prevalent model for delivering professional development. Yet, workshops have an abysmal record of accomplishment for changing teacher practice and student achievement. (Yoon, Duncan, Lee, Scarloss, & Shapley, 2007). Over 90 percent of teachers reported having participated in professional development in the past year, but the majority also reported that it was not useful (Darling-Hammond, L., Chung Wei, R., Andree, A., & Richardson, N., 2009).

Incorporating an effective professional development intervention in this action research project allowed teachers to align a unit of study to curriculum standards.

Statement of the Problem

There was a limited body of research on teacher planning and the use of curriculum standards, specifically at the middle school level (Brown, 1988). Intensive studies that observed teachers during planning or probed their thinking in personal interviews that were held near the time that planning took place, helped researchers understand the planning process (Brown, 1988). Research on teachers' planning did not clearly indicate the extent to which teachers draw from curricular resources when making planning decisions (Castro-Superfine, 2008). Experienced teachers often began planning with a general idea for a learning activity. Teachers did not focus on lesson objectives as they began to plan (Doyle & Holm, 1998). Research indicates it is common for teachers to begin instructional planning by first considering the content to be taught but they rarely consider learning objectives (Greiman & Bedtke, 2008).

Based on the experience and observations of the researcher in her role as a technology integration specialist and middle school classroom history teacher at the local site, there were inconsistencies among academic content teachers when collaborating during common planning time meetings to design lessons and units aligned to curriculum standards.

Purpose of the Study

The purpose of this action research study was fourfold: First, to explore local conditions of how suburban middle school science and language arts content teachers used planning time, and if they incorporated curriculum components when planning units of study. Second, to confirm if providing professional development focusing on instructional planning strategies and

supports impacted teachers' abilities to identify starting points for their teaching, outline the sequence of activities and assessments, and align daily lessons and a unit plan of study to curriculum standards using the Understanding by Design framework (Wiggins & McTighe, 2005). Third, to determine if the professional development intervention and the Understanding by Design framework transformed teachers' capacity to design a unit plan of study aligned to curriculum standards. Finally, to improve the teacher-researcher's own praxis.

Significance of the Study

Examining teachers' goals, judgements, and decisions, in relation to teaching behaviors within the classroom context was one way to understand various aspects of teaching (Shavelson, 1983). Once teaching aspects were explored at a local level and thorough review of the literature, a professional development intervention specific to the local conditions was employed (Cooper, 2009). The intervention was designed to assist teachers to effectively incorporate curriculum components when planning a unit of study. Shavelson and Stern (1981) found that teachers were not concerned with subject matter or structure when planning instruction. Their concern with the selection of content for the purpose of building tasks (Shavelson & Stern, 1981).

According to Mertens, Flowers, Anfara, and Caskey (2010), the gap in research regarding common planning time falls into three key areas of inquiry. First is how teachers use their planning meetings to plan and coordinate curricula, instruction and assessment for their students. Second is the quality of collaboration and interactions among team teachers during planning meetings. Third is how teachers' understanding of the goals and purposes of common planning time and professional preparation impacts how teachers function during meetings (Mertens et al., 2010).

The focus on planning time aligns with the purpose of this study to improve local conditions of teachers through professional development that implements the Understanding by Design unit-planning framework. Building administrators and content specialists can also help determine how best to support classroom teachers to effectively design and implement curricula in all content areas at the building level.

Operational Definitions

Common Planning Time

Common planning time (CPT) is a specific, planned period of time during the school day in which teachers on a team meet with one another to plan curriculum and assessments and share instructional strategies (George & Alexander, 2003; NMSA, 2010). Common planning time at the local site where this research takes place refers to subject area teams made up of teachers who teach the same subject and who use CPT to guide improvements in practice related to curriculum, instruction, and assessments in a specific content area (Legters, Adams & Williams, 2011)

Professional Development

Professional development is about teacher learning and learning how to learn and transforming teacher knowledge into practice to improve student growth (Avalos, 2011). Professional development takes place in a professional community or team of teachers in order to change practice. Teachers should be able to practice the change and continually work with the group to discuss and resolve and issues that arise (Darling-Hammond, 1997).

Understanding by Design Framework

Understanding by Design refers to a curriculum, assessment, and instructional planning framework that uses a three-stage backward design process. Instructional planning begins with

identifying desired results, and then determining assessment evidence, and then planning lessons and learning activities (Wiggins & McTighe, 2011).

Transformative Learning Theory

Refers to a theory of adult learning that describes and analyzes how adults learn to make new meaning of their experience (Mezirow, 1991).

Coaching

Refers to the process of instructional experts who work with teachers to plan classroom instruction in a way that is individualized, intensive, sustained, context-specific, and focused. The coaching sessions can occur one-on-one where the coach and teacher interact at least every couple of weeks over an extended period of time. The sessions are specific to teacher practices within the context of their classroom and they are focused on engaging teachers to deliberately practice specific skills (Kraft, Blazar, & Hogan, 2016).

Resources

Refers to instructional resources designed to support or supplement instruction for student lesson activities and assessments. Resources include state and district curriculum guides, digital resources and textbooks used to support unit planning and curriculum alignment (Remillard & Heck, 2014).

Action Research

Refers to an on-going, collaborative inquiry into various aspects of education. Action research is a professional approach to school improvement in a local condition. It operates under the assumption that local educators know best practices of how to improve their schools. Through an on-going cyclical process of action research and the development of new designs and policies, staff make the changes for sustained improvement (McTighe, 2009).

CHAPTER II: LITERATURE REVIEW

Teacher Planning

What teachers think prior to teaching is said to shape what they do in the classroom (Carnahan, 1980; Clark & Peterson, 1986). The act of planning often serves as a guide or mental image of the upcoming lesson. This influences the content covered, lesson focus, learning opportunities, organization of students, and teacher-student interactions (Carnahan, 1980; Griffey & Housner, 1991; Hill, Yinger, & Robbins, 1981; Peterson & Comeaux, 1987). The planning process serves as a connection between curriculum, instruction, and student learning.

Empirical studies and literature suggest that secondary school teachers typically do not plan instructions or base lessons on solid plans (Reynolds, 1992). Successful implementation of new programs requires planning, appropriate strategies and staff development. Patterson and Czajkowski (1979) state, "we make our way through the initiation, development, and adoption phases, but then we do not take steps necessary to achieve a satisfactory level of implementation. Our innovations do not enter the classroom; they do not affect day-to-day interaction between teachers and students" (Patterson & Czajkowski, 1979, p. 204).

Instructional planning is a process that accounts for a significant portion of a teachers' time. It enables teachers to identify starting points for their teaching, outlines sequence of activities and enables teachers to link daily lessons with broader curriculum goals and objectives (Kitsantas & Baylor, 2001). For example, Torres and Ulmer (2007) in agricultural education that student teachers during a 15-week experience, found planning and preparing to teach consumed 26 percent teachers' time. Teachers spend more time thinking about planning rather than writing formal instructional plans (Ball, Knobloch, & Hoop, 2007; Wilen, Ishler, Hutchinson, & Kindsvatter, 2000). Empirical studies suggested secondary teachers did not bother to plan their

instructions, nor did they base their lessons on solid plans (Reynolds, 1993). Assisting teachers to create lesson plans, activities, and assessments aligned to curriculum standards to ensure implementation should be researched.

Previous research has found that teachers engage in remarkably complex thought processes as they construct instruction (Fernandez & Cannon, 2005). Clark and Dunn (1991) found that the psychological process of planning as a means for teachers to visualize their future teaching situation and to consider the goals and ways of achieving them is helpful. Jackson (1968) found that during the planning and pre-active teaching, teachers mentally engage in a purposeful effort to develop activities that will motivate and enhance students' cognitive development. As a result, written instructional plans provide evidence that can be used to gain insight into teachers' pedagogical content knowledge (Panasuk & Todd, 2005).

Planning is an important and often underappreciated aspect of teaching practice, when teachers make decisions that ultimately affect students' opportunities to learn (Clark & Peterson, 1986; Floden, Porter, Schmidt, Freeman, & Schwille, 1980; Stigler & Hiebert, 1999). Teachers need to pay careful attention to designing their lessons; "effective teachers understand that teaching requires a considerable effort at design. Such design is often termed planning, which many teachers think of as a core routine of teaching." (Kilpatrick, Swafford, & Findell, 2001, p. 337).

Research indicates teachers need support to improve their design expertise and it depends on teachers' ownership of and their knowledge about reform ideas (Handelzalts, 2009). There is a lack of lesson design expertise, which affects the curriculum implementation process as well as the quality of instructional design (Hadre, 2006). Teachers and facilitators must work collaboratively to design quality lessons (Huizinga, Handelzalts, Nieveen, & Voogt, 2015). It is

important to investigate how teachers use individual planning time as well as collaborative planning time when designing units of study in order to understand and improve current methods of instruction and collaboration.

Principals and Teacher Learning

There are greater demands for accountability in education, especially with respect to outcome-based measures, which requires principals to focus on instruction. Principals need to help teachers shift their focus from what they are teaching to what students are learning in order to meet the current educational demands. In addition, principals need to eliminate teacher isolation so that discussions about student learning become a collective goal of the school (Lunenburg, 2010).

Educational reformers and researchers agree that the primary role of the principal is to align all aspects of schooling to support the goal of improving instruction to increase student achievement (Darling-Hammond, LaPointe, Meyerson, Orr, & Cohen, 2007). According to research by Leithwood and Jantzi (2000), there are specific effective leadership practices that are associated with effective support of instructional improvement. The most important practices involve principals working directly with teachers to improve effectiveness in the classroom through research-based strategies, providing resources and professional development to improve instruction, regularly monitoring teaching and student progress, participating in discussions on educational issues, and promote high expectations.

Principals need to promote an environment in which new information and practices are incorporated into the educational system because teachers are more likely to pursue their group and individual learning when they feel supported by effective leadership (Lunenburg, 2010). In

fact, schools where teachers collaborate in discussing issues related to student learning are more likely to be able to take advantage of internal and external information.

According to Lunenburg (2010):

> "The instructional leadership of the principal is a critical factor in the success of a schools' improvement initiatives and the overall effectiveness of the school. The primary responsibility of the principal is to promote the learning and success of all students. School principals can accomplish this goal by focusing on learning, encouraging collaboration, using data to improve learning, provide support, and aligning curriculum, assessment, and instruction" (p. 5).

Principals are recognizing that teachers should be working together in teams as opposed to individually in isolated classrooms in order to enhance teacher and student learning. Despite this research, the relationships among instructional leadership, teaching, and student achievement have not been adequately studied. Short (1995) has recommended more research be conducted into the effects of leader behavior on teacher behavior, the relationship of instructional leadership to teaching, instructional leaders' characteristics, and conditions necessary for effective instructional leadership.

Based on study done by Blase and Blase (1999), principals who are attempting to become effective instructional leaders should work to integrate collaboration, peer coaching, inquiry, reflection and growth to build a school culture of individual and shared critical examination for instructional improvement. In another study that focused on the influence of effective leadership on teaching and learning, it was found that the use of modeling by administration had a positive effect on teacher motivation and implementation of more effective strategies being utilized in the classroom. In addition, the study found that teachers need an

opportunity to see effective teaching strategies being implemented by school leaders. When modeling occurred, school leaders were seen as knowledgeable collaborators vested in helping teachers improve student achievement through effective pedagogy. The results of these studies support the concept of effective school leadership and the idea that effective leadership guides teaching and learning through modeling effective strategies, building positive collaborate relationships, and demonstrating support for teachers as they implement new strategies in the classroom (Barrett & Breyer, 2014). These findings are also significant in the area of teacher collaboration during common planning time.

Common Planning Time

In *Turning Points: Preparing American Youth for the 21st Century* (Carnegie Council on Adolescent Development, 1989), the need for teachers to have greater authority to make decisions that affect the educational experiences of their students was addressed. One recommendation was that teachers on teams should have control over their curricular goals, choose instructional methods and materials, and assess student performance based on the set objectives. Another recommendation was teachers should have time to come together to form teams where they can express their ideas, discuss students they all teach, and have a support system when they encounter issues. From these recommendations came the formation of interdisciplinary teams that use common planning time for team members.

The increased rigor of education across the United States due to the Common Core Standards (CCSS) and Smarter Balanced Assessment requires students to show more than simply demonstrating rote knowledge in their work. To accommodate the changes in rigor, common planning time developed into a means to help teachers meet these new demands (Owens & Deitz, 2016). Through the constructivist approach where the social interaction of learners builds

knowledge and understanding, researchers assume that the effective use of common planning time can enhance the quality and performance of middle grade teachers who teach on interdisciplinary teams. Interdisciplinary teams with common planning time allows teachers to collaborate and learn from one another's experiences (Cook & Faulkner, 2010). Researchers assume that the effective use of common planning time can enhance the quality and performance of middle grade teachers who teach on interdisciplinary teams. In the local setting of this study, common planning time refers to grade-level content teachers working together to plan instruction.

Common planning time has been found to have a positive impact on school climate, increased collegiality, and positive view of the school environment. Haverback and Mee (2013) site several studies that examined different teaming structures within middle schools and found that teachers on interdisciplinary teams with common planning time had more positive views of their work environment than teachers without common planning time. In addition, findings also indicated that teachers who use both interdisciplinary teaming and common planning time report significantly higher personal efficacy as well as higher perceptions of their school climate and faculty cohesiveness. In addition, researchers have found that interdisciplinary teams should have common planning time at least four times a week for a minimum of 30 minutes each session. The research over the past 25 years focused on the impact of an interdisciplinary team organizational structure along with common planning time, primarily dealing with the benefits to both students and teachers. The research revealed that interdisciplinary teams with common planning time provide a greater opportunity for students to be better known by their teachers, led to higher overall self-concepts, increased self-esteem, a positive school climate, and led to high levels of student achievement (Mertens et al., 2010). Although a significant body of research

exists on common planning time, missing from the research already conducted are the "nuts and bolts" (Mertens et al., 2010, p. 53) of how teachers work collaboratively during common planning time to accomplish goals.

Providing teachers with supervised experience and practice on how to use common planning time helped them understand the purpose. Common planning time helped increase positive attitudes towards teaching students because of a better understanding of students' needs, as well as helped reduce teacher isolation (Owens & Deitz, 2016). Cook and Faulkner (2010) indicated that although there is significant information on how to establish interdisciplinary teams with common planning time, as well as its potential impact, there is limited information on how interdisciplinary teams actually use common planning time.

Common planning time is the most important thing a principal can do to ensure the success of teaming, but just having common planning time is not enough (Williamson & Blackburn, 2006). There is a lack of knowledge of what can be done during this time, lack of leadership, and lack of quality of professional development (Rottier, 2000). In fact, according to a study done by Steffes and Valentine (1996), 80% of teachers in their national study involving nearly 100 schools reported that they received little or no training or professional development for serving on teams and using common planning time. Teachers need to learn how to effectively work with one another in order to improve student outcomes. Multiple studies identified that teachers use common planning time to discuss housekeeping topics, which are considered low-level tasks, such as behavioral issues, scheduling problems, logistics, and conferences. The studies also concluded that the purpose of common planning time should focus around instructional planning and implementation, which are considered high level tasks, in order to increase teacher and student performance (Shaw, 1993; Rottier, 2000).

Implementing effective common planning time is paramount in order to increase student and teacher learning. The literature from several studies recommend specific steps to improving the foundations of teaming. Collaborative teams must understand the purpose and goal of common planning time, receive training in team-working skills, have a written agenda outlining high level tasks, have a problem-solving procedure in place, and be guided by effective leadership and staff development (Lujan & Day, 2010; Owens & Deitz, 2016; Rottier, 2000). This information regarding the day-to-day logistics of how teachers work collaboratively during common planning time to accomplish the goals of interdisciplinary teams is missing from the research and is a purpose of this study (Mertens, Flowers, Anfara, Caskey, 2010).

Finally, research indicates leaders are essential in collaborative settings. Leaders have an indirect impact on student learning outcomes through initiated professional development opportunities for teachers. Some research has empirically linked school leaders to effective teacher collaborative practices (Burton, 2015). Exploring how principals use professional development to improve teacher learning will assist the researcher in providing an effective professional development strategy in this study.

Professional Development

Professional development is one of the key issues in human resource management and development in education as today's education policies require education managers to ensure a meaningful and effective education will be delivered to every citizen in society. In an era of high stakes assessment and standards-based educational reform, the need for high quality professional development has emerged as one of the most important areas for research in education (American Association for the Advancement of Science, 1993; Borko, 2004; National Board for Professional Teaching Standards, 1998, 2001a, 2001b; National Council of Teachers of

Mathematics, 1989; National Research Council, 1996; National Staff Development Council, 2001; U.S. Department of Education, 2001).

Professional development has been a part of teaching since the early days of formal education and it has evolved over time. Debates over content implementation of teacher education programs have been ongoing with inconclusive results, but what is certain is that current professional development programs need to be modified and refined in order for meaningful changes to occur (Trehearn, 2010).

According to Bolan (1993), teacher professional development refers to "any professional development activities engaged in by teachers which enhance their knowledge and skills and enable them to consider their attitudes and approaches to the education of children, with a view to improve the quality of the teaching and learning" (Bolan, 1993, p. 271). Professional development offers a means of collaborative support and training to collectively conquer the challenges of teaching. The need for continued professional development is widely accepted. For "growth and improvement of any educational institution, teacher professional development becomes a milestone in teachers' continuum of life-long learning and career progression" (Hein, 2009, p. 4).

Although research has focused on the defining characteristics of quality professional development opportunities, little has been done to examine the specific factors involved in teacher learning from a professional development activity and its relationship to practice and student learning (Garet, Porter, Desimone, Birman, & Yoon, 2001; Guskey, 2003; Kubitskey, Fishman, & Marx, 2003; Kubitskey, Fishman, & Marx, 2004; Loucks-Horsley, 1997; Richardson, 2001).

Gusky (1986) states that high quality staff development is a central component in every plan for improving education. An increase in staff development that enhances professional skills is essential because teachers remain in their positions for longer periods, with fewer new teachers entering the field. The purpose of staff development programs is to systematically create change in the classroom practices of teachers, change in their beliefs and attitudes, and change in the learning outcomes of students. In addition, the history of staff development can be characterized primarily by disorder, conflict, and criticism, with most every major work focusing on the failings of staff development. The ineffectiveness of such programs has been linked to two critical factors that are missing form professional development. The first missing factor is understanding what motivates teachers to engage in professional development, and the second factor is the process by which change in teachers typically occurs (Gusky, 1986).

Prior research clearly indicates that teachers participate in staff development because they believe the activities will help them become better teachers. In fact, extrinsic rewards such as pay were found to have no effect on teachers' motivation toward staff development (Berman & McLaughlin, 1978). Teacher motivation and professional development comes from a teachers' desire to enhance the learning outcomes of their students. Another study conducted by Harootunian and Yargar (1980) found that teachers' perceptions of success, regardless of teaching level, was defined by the behaviors and activities of their students, rather than in terms of themselves. Teachers are attracted to staff development programs because they believe these activities can expand their knowledge and skills, inspire growth, and increase their effectiveness with students. It is essential for leaders to understand that teachers are pragmatic when it comes to professional development. Teachers want specific, concrete and practical ideas that directly connect to the day-to-day process of their classrooms. Professional development programs that

are not pragmatic in nature will unlikely succeed (Gusky, 1986). In fact, Gusky (1986) suggests one reason professional development is ineffective is because many programs do not take into account the process of teacher change. Professional development programs focus on changing teachers' attitudes, beliefs, and perceptions. Leaders tend to want to change teachers' beliefs about certain aspects of teaching based on a specific curriculum or instructional strategy in order to lead to specific changes in classroom behaviors and practices. However, recent research on teacher change indicates that the assumptions of this model are inaccurate when considering professional development programs for experienced teachers.

Future research should focus on determining more creative ways to help teachers translate new knowledge into practice. In addition, there is a need for better and more efficient methods of providing teachers with regular feedback on the learning progress of their students. There needs to be more exploration into specific teacher attitudes and beliefs most crucial to professional development and to find ways to measure such variables (Gusky, 1986).

Research shows traditional professional development operates under a faulty theory of teacher learning. The one-time workshop assumes the only challenge facing teachers is a lack of knowledge of effective teaching practices and when that knowledge gap is corrected, teachers will then be able to change, but this is not the case. Teachers' greatest challenge comes when they attempt to implement newly learned methods into the classroom. Evidence strongly indicates the one-shot workshops are ineffective (Murphy, 2000). The one-time workshop is an insufficient professional development approach to building the capacity of teachers to foster student knowledge and higher order skills (Gulamhussein, 2013).

Trehearn (2010) also found that professional development needs to lead teachers toward becoming better instructors. Presenters of professional development sessions should model

excellent teaching strategies and serve as role models for teachers. It is suggested that the education community combine what is known about best teaching practices and combine it with adult learning theory to improve professional development practices.

In addition, teacher perceptions about professional development indicate that teachers need to be involved in their own professional development as presenters and collaborators. Teachers want to have greater input, given a voice, and have the opportunity to make relevant and useful choices. The implication of this finding is it supports the need for collaboration, accountability, and on-going learning opportunities, which aligns with how teachers plan, how they collaborate during common planning time, and their expectations of leadership support (Trehearn, 2010).

Professional development focuses on knowledge, skills, and attitudes required by teachers, administrators, and other educators that are directed toward all students learning at high levels of achievement (Sparks & Richardson, n.d.). Teachers must keep their knowledge and skills current throughout their careers. There is a large body of research-based evidence which has defined the characteristics of effective professional development (Darling-Hammond, 1997; Sparks & Hirsch, 1997). Effective professional development helps teachers understand their belief systems in order to help them develop accurate beliefs about teaching. Professional development must focus directly on the curriculum teachers are teaching every day. The research states the most effective professional development focuses specifically on the resources and curriculum teachers are using for instruction. Finally, professional development must include the four critical components of theory, demonstration, practice and feedback (Cooper, 2000).

The professional development intervention employed in this action research study was based off the research done by Cooper (2000), *Professional Development: An Effective*

Research-Based Approach. The major conclusions drawn from the research indicates there are four critical components to help teachers learn new strategies and skills; 1) presentation of theory, 2) demonstration of the strategy or skill, 3) initial practice in the workshop, and 4) prompt feedback about their teaching. Each of these components must be included in any model for effective professional development (Cooper, 2000). This model for professional development includes the four significant components and connects to transformative learning theory.

Understanding by Design Framework

Understanding by Design (UbD) was developed by Grant Wiggins and Jay McTighe and produced by the Association for Supervision and Curriculum Development (ASCD). According to McTighe and Seif (2003), UbD is a three-stage backward planning curriculum design process that assists educators in designing lesson and unit plans with the end in mind. Backward design focuses on developing and deepening understanding of important big ideas or concepts (Mills, Wiley, & Williams, 2019). The first stage of planning begins with educators identifying the desired results. This stage begins with identifying the goals and content standards that should be included in the unit plan. There is a negotiating process in this stage because educators have to decide which standards are the most important in teaching deeper understanding of specific content or themes. This stage is about determining what students should learn and understand at the end of a unit and a main component (ASCD, 2012). According to McTighe and Reese (2013), "an important point in UbD is to recognize that factual knowledge and skills are not taught for their own sake but as a means to larger ends" (McTighe & Reese, 2013, p. 5). Teachers should build performance tasks and assessments that allow students to transfer their learning to new situations and make meaningful connections with the content.

Stage 2 involves determining the assessments in the unit and specific lessons. The assessments may include performance tasks and other evidence. Performance tasks require students to apply their learning to a new and authentic situation. Other evidence can include quizzes, tests, observations, and projects. It is important for educators to design lessons that actually measure the standards identified in stage 1 (ASCD, 2012).

Stage 3 is where the learning experiences and instruction are planned. Teachers plan appropriate lessons and learning activities in order to address the curriculum goals outlined in Stage 1, which should include transferring of knowledge, meaning making, and acquisition. It tis though these lesson that learning is transferred from basic skills to making meaning and transferring their learning (McTighe & Reese, 2013).

Transformative Learning Theory

Theory frames how we look at and think about a topic. Theory enables us to connect a single study to the immense base knowledge to which other researchers contribute (Neuman, 2006). The purpose of the needs assessment of the study was to uncover teacher perceptions about planning and curriculum alignment. The researcher must first understand teachers as a whole person taking into consideration their values, beliefs, and assumptions about teaching and their ways of seeing the world (Cranton & King, 2003) in order to construct meaning. The second phase of the research focused on confirming the effectiveness of the professional development intervention model that was employed to assist teachers to effectively plan units of study aligned with curriculum standards.

The theoretical framework for this research study was transformative learning theory. Transformative learning theory has emerged within the field of adult education as a powerful image for understanding how adults learn and is the principle theoretical framework of this study

(Dirkx, 1998). Transformative learning theory is based on constructivist assumptions in that meaning exists from within and not from external forces. We make meaning of the world through our experiences. We develop a frame of reference for understanding the world and in the process of daily living, we absorb values, assumptions, and beliefs about how things are without much thought (Cranton & King, 2003). When we encounter something different from what we are accustomed to, we begin to ask ourselves questions to gain clarity and understanding. We begin to self-reflect about our previous held views and realize they no longer fit because they are too narrow and do not explain the new experience. Given that we are social creatures, we discuss this process with others and we engage in discourse. Ideas and evidence from others help us to consider our own views in a new light (Mezirow & Associates, 2000).

Since first introduced by Mezirow in 1978, the concept of transformative learning has been a topic of research and theory building in the field of adult education (Taylor, 1997). Mezirow (1978) conducted a qualitative study based on 83 women returning to college in 12 different re-entry programs after an extended period of time. The purpose of the study was to "identify factors that characteristically impede or facilitate the progress of these re-entry programs" (Mezirow, 1978, p. 6). The study concluded that the respondents had experienced a perspective transformation and ten phases that could be experienced during this transformation were identified. The key to transformative learning is disorientating dilemma or a triggering event that stimulates a person to go through critical self-reflection and self-examination where personal assumptions, beliefs, and habits of mind are examined (Santalucia & Johnson, 2010). According to transformative learning theory, for learners to change their specific beliefs, attitudes, and emotional reactions, they must engage in critical reflection about their experiences (Mezirow, 1991). When educators are led to examine their practice critically and acquire

alternative ways of understanding what they do, transformative learning about teaching takes place (Cranton, 1996).

This theory has evolved "into a comprehensive and complex description of how learners construe, validate, and reformulate the meaning of their experience" (Cranton, 1994, p. 22). The three common themes in Mezirow's theory are centrality of experience, critical reflection, and rational discourse. Individual experience is the main medium of transformative learning and includes the prior experience of the person. Individual experience is a person's starting point to critical reflection. It is through ones prior experiences and new experiences that are created through classroom activities, relationships, and discourse that provides dialogue for critical reflection and potentially forming a new perspective. Critical reflection is the second component to transformative learning and it occurs when a person questions his or her previously held assumptions and beliefs. This occurs when one experiences conflicting thoughts and feelings and can lead to perspective transformation. Mezirow (2000) distinguishes among three types of reflection. Content reflection looks at the content or description of the problem. Process reflection involves looking at the problem-solving strategies being used. Premise reflection examines the basis of the problem. Content and process reflection can lead to transformative learning about a specific belief or assumption, but it is premise reflection that engages learners to see themselves and the world in a new way, which leads people to transform their habit of mind.

Finally, transformation is developed through dialogue and it is an essential component to changes in learning and perspectives. Dialogue allows our experience and critical reflection to come to life and be put in action. This is where a person reflects on their experience and questions their beliefs and assumptions (Mezirow & Taylor, 2009).

In order to understand how people make sense of the world based on their previous experiences, a researcher must understand how people view the world and their experiences. Mezirow (2000) states people view the world through a web of assumptions and expectations, which is their frame of reference, and it consists of *habits of mind* and *assumptions*. Habits of mind include how people learn, sociocultural background and language, psychological nature, and moral and ethical views. Santalucia and Johnson (2010) explain, "assumptions play an influential role in actions by filtering and directing attention, guiding choices, and interpreting the meaning of an act or experience" (Santalucia & Johnson, 2010, p. 2). Assumptions can become a habitual way of viewing the world because people tend to integrate experiences that comfortably fit their frame of reference (Mezirow, 1991). It is through this lens one views the world, which can contribute to barriers of prejudices, stereotypes, and unexamined beliefs and assumptions that can be difficult to break.

As a researcher, it is important to understand not all people will be open to transformative learning and it is not something that can be forced upon someone. According to Cranton (2006), educators cannot ensure that transformative learning will take place. Students and teacher-learners have to decide to embark on the journey of transformation on their own. Although change cannot be forced, there are fundamental principles to follow in order to foster a learning environment that supports transformative learning. The facilitator must act as a role model and show a willingness to learn and change and build trust with members of the community. The student also shares the responsibility of promoting an environment where transformation can occur by being an active participant in the process (Santalucia & Johnson, 2010).

Empirical Research

There has been significant empirical research in the field of higher education in the medical field, healthcare, organizational partnerships, and coaching that have employed transformative learning theory as the theoretical framework. This body of research has added to the theoretical underpinnings of how people create, transfer, and employ new knowledge.

In a cohort design study conducted at the University of Glasgow (Goldie, Schwartz, & Morrison, 2004), the effects of a modern medical curriculum on students' attitudes and potential behavior towards informing a 12-year old patient of her terminal prognosis in a situation where her parents do not want her to know was investigated. An adapted multiple choice Ethics in Health Care Survey Instrument (EHCI) was used to measure the ethical decisions students made regarding the 12 case vignettes that included an ethical dimension. The respondents had to justify their responses to the multiple choice response. The survey was administered before the first year started, and at the end of years 1, 3, and 5. The results indicate no significant change towards consensus at any point in the curriculum. By the end of the curriculum, only 23% chose the consensus pre-set answer.

The results of the study indicate the importance of identifying students' perceptions of ethical issues on entry to medical school and evaluate changes as they progress through the curriculum (meaning perspectives) even though there was no significant change. The direct instruction involved in delivering the curriculum was lectures and teaching large groups, which did not follow the guidelines for promoting transformative learning. Although the article offered statistical analysis of the data and reliability measures were taken, the fact that the same measure (EHCI) was given each time to the same students over time may have affect the results. In

addition, two multiple choices questions may not allow for an accurate picture of student change in perceptions over time.

The study does support research that indicates transformative educators should use small groups when delivering instruction. For example, in a qualitative study examining the process of transformation of beliefs, values, feelings, and knowledge (meaning perspective) underlying occupational change in a small group (N=5) of clients with rheumatoid arthritis (Dubouloz, Laporte, Hall, Ashe, & Smith, 2004), it was found that the exploration of perspective transformation by clients and therapists could be a potential component of rehabilitation intervention. Critical reflection based on new knowledge of the illness appeared to be a key element of the transformation process. Clients reflecting on their new situation with illness seemed to enable them to recognize self-continuity and self-acceptability and gain a new meaning perspective of self-respect (p. 404). Although transformation was found in this study, the participants were all women and the only one data strand of individual interviews was employed. The researchers should have included a broader sample that included men, as well as multiple data strands to further support the results. In addition, a longer period than 8 months should have been considered or follow-up with patients at a different time should have been conducted to determine if transformation continued over time.

Cahill and Bulanda (2009) conducted a pre-test/post-test design to determine whether participants in the course had made transformations in their habits of mind when designing client goals, interventions, and recommendations for a fictional case study of a child with a disability. Current occupational interventions focus on developmental skills instead of on the environmental context. This study focused on helping therapists change their expectations of young children with significant disabilities and discover ways they could promote self-determination through

therapy. Following the completion of the transformative learning strategies course, participants demonstrated changes in habits of mind based on the completion of the post test case study. The researchers selected local expert therapists to provide input regarding topics they believed were essential to include in a pediatric occupational course. The instructional delivery was based on the literature and effective way to instruct transformation learning that emphasizes reflection and changing existing perspectives.

Although one of the limitations of this study is the small sample size (N=3), but it does extend the previous research findings (Goldie et al., 2004) that found transformative learning is best employed with individuals or small groups. Another limitation of the study is employing a fictional case study may not give authentic responses from participants because they are safe to make recommendations without real-life pressures. The study only included a single-posttest measure. A follow-up posttest could have been given once the participants were back in their workplace.

Transformative learning theory was applied in business, leadership, and life coaching. The purpose of a qualitative study conducted by Sammut (2014) was to discover if and how transformative learning theory was applied in coaching because there was limited research in this area. The participants in this study were all females and included a small sample size (N=8). Participants were coaches who provided services for at least two years on an individual basis, practiced transformational coaching in any context (coaching executive, life coach, business coach) and had approximately 100 hours of coaching practice, which was based on minimum certification standards. The study took place over a 6-week period and data collection consisted of open-ended interviews, observations and audio recordings. Findings reveal four emerging themes – space and context of coaching environment, coaching relationship, dialogue, language

and communication, and transformation, which align with Mezirow's (2009) six core elements of transformation. The author concludes that coaching can benefit from the application of transformative learning theory and that individuals learn more effectively through the coaching process. There was a need for further research in the field of coaching in order to grow and standardize through accreditation (Mezirow, 2009).

In the field of organizational partnerships, an exploratory case study was conducted (Franz, 2005) to explore change in individuals by observing and analyzing successful partnerships between Cornell Cooperative Extension (CCE) campus faculty and county Extension educators to determine the role of transformative learning in these cross-professional partnerships. Each partner participated in open-ended interviews about their history with Extension, the work of their partnership, and learning and success in their partnership. All 10 partnerships had reputations for being successful and several common contributing factors to success was uncovered across cases. Data were analyzed using Eisenhardt's (1989) comparative case study method. In this study, transformative learning existed in 6 of the 10 partnerships and included 9 of the 12 partners. In addition, the study found five common conditions that promote this type of learning in partnerships, which include strong partner facilitation, critical reflection in transforming partnerships, presence of critical events that set the foundation for change, a common purpose among partners, and valuing personal autonomy while also working with others.

A critique of the study, aside from the small sample size is it would be difficult to replicate this study because the authors do not include clear procedures or the types of questions that were asked in the interviews. That being said, this study presents important themes to be considered when conducting transformative learning research. The study recommends that

professional development opportunities, staff meetings and work teams include critical thinking and reflection activities in order to transform learning.

Transformative learning theory has been applied to collaborative teacher planning settings in order to uncover the thought processes and behaviors teachers experience when designing instruction. Powell and Kusuma-Powell (2015) state that adults face two types of challenges in professional learning. The first challenge is technical and adaptive. Technical challenges require informal learning to address the challenge and solve the problem. These issues may arise when a teacher is exposed to a new software program and must learn how to use it for instruction. This type of learning does not generally take much time or energy and is relatively easy to fix. The issue is that schools also encounter adaptive challenges, which are complex, take time and patience to address.

The author's state transformative learning or learning that requires us to rethink our values, beliefs, and assumptions is a way to address adaptive challenges. Powell and Kusuma-Powell (2015) reviewed a school survey regarding differentiated instruction (adaptive challenge) where many teacher responses indicated teachers were not invested in individualizing instruction for their students and they were content with the way things were working in the classroom. The building leadership provided resources, training workshops, incentive grants and an online blog for support with the assumption that if teachers understood how to differentiate instruction, they would become skillful and transfer their new knowledge. The problem the leaders were making was they were trying to solve an adaptive challenge (differentiated instruction) with a technical solution, which causes resistance. The authors state that Psychologist Robert Kegan calls this reaction to change immunity to change and it occurs when we strive to protect our self-esteem,

reputation with colleagues, our perception of past success, and our feelings of professional fulfillment when external change occurs.

An important factor the study identifies is that the most hardworking, dedicated, and experienced teachers are also resistant to change because they feel they know how to teach their students without new initiatives. This is a key finding for researchers who want to assist all educators to change their perspectives and assumptions. Powell and Kusuma-Powell (2015) indicate the teachers in this study faced adaptive challenges that required transformational learning in values, beliefs, and assumptions. They created a plan and worked with the leadership team to work with small group resistant teachers. Coaching was employed for six months and teachers set goals that required transformational learning. The teachers were observed over time and continuous dialogue between coaches and teachers was conducted. The authors conclude that when leaders invest time with and energy supporting transformational learning of a few teachers it sets in place the conditions needed to promote professional learning in more teachers. This article brought light to the difference between technical and adaptive challenges and the way in which to address the problems that come with either challenge.

In another empirical article, Servage (2008) describes the potential power of professional learning communities (PLC) to transform teacher perspectives and behaviors. The PLC model is built on the core beliefs that staff professional development is critical to improved students learning, professional development is the most effective when it is collaborative and collegial, collaborative work should involve inquiry and problem solving in authentic contexts of daily teaching practices. Members of PLC's should engage distributed leadership, shared decision making, and a focus on dialogue while implementing shared norms and values. Servage (2008) explains the literature states if properly implemented, it has the potential to transform schools

from factory-model to schools that embrace new ideas and assumptions that are much different than have directed schools in the past.

The purpose of PLC's is to allow teachers to share work, critically examine their practice with others in a trusted environment and have a shared vision. The current issue with professional learning communities is the focus is on the technical teaching strategies that will promote academic outcomes for students. Although understanding best practices and pedagogy is important, it is only part of the collaborative process and it is not transformative (p. 65). In order for transformation to occur, the literature indicates critical reflection must occur beyond terms of teaching practices and it must extend to consider the factors that prevent the vision and mission from being realized. In addition, there is a gap between the models of a professional learning community looks on paper and what it is in practice and this gap is not being addressed in schools. In fact, in a study done by Leonard and Leonard (2005), it was concluded that the attainment of a collaborative culture of teaching and learning has had limited success and seems doubtful to be attained.

The author suggests that professional learning communities need to engage in critical dialogue in order for transformation to occur. Teachers need both time and psychologically safe space, which have been absent in teachers' professional development. The purpose of PLC's must shift from conversations revolving around finding solutions to technical problems to providing a structure where teachers have open conversations oriented towards communicative learning that is foundational (p.74). The importance of this article is it offers specific ways to begin to change the way teachers collaborate, plan instruction, and create new learning. Teachers are focusing on small tasks and the big picture is overlooked.

In order to assist teachers in questioning their values, beliefs, and assumptions, we first must understand their current ideals about the teaching process. Margo (2002) conducted a qualitative study comparing English and ESL teachers' perspectives of teaching and learning with the role and the process of learning using the transformative learning theory. The purpose of this study was to determine if teachers viewed themselves as transformative educators and if their conceptions of the teacher-learner process reflect the assumptions of transformative learning theory. The results of the study indicate teachers did not refer to themselves as transformative educators and theory is not driving practice because they did not have an understanding of Mezirow's theory of perspective transformation. The study did uncover teachers' intentions; views of learning, curriculum orientation, and personal philosophy of practice were consistent with the role of the transformative educator. The common themes in the study emphasized the importance of providing a safe, open, and trusting environment for learning and using instructional strategies that support a learner-centered approach that promoted choice and self-direction.

A criticism of this qualitative study is it employed yes/no-quantitative research questions (Do teachers see themselves as "transformative" educators?). In addition, the study does not explain in detail the data collection and analysis procedures or the sample population and although the results align with other research done in the field, replication would be difficult. A central finding of this study that is important to future research is the understanding that educators do not view themselves as transformative learning, theory does not drive their instructional planning decisions, and this is an area where further research is needed.

Synthesis of the Theoretical Framework

The researcher's philosophical worldview aligns with major elements of transformative learning theory, which include centrality of experience, critical reflection, and rational discourse, and coaching (Mezirow, 2000). The researcher will employ a constructivist role when interviewing and observing teachers to gain an understanding of teacher experiences. The researcher's role was also post positivist during the professional development intervention in order to observe and evaluate the participants as they engaged in the process of creating new knowledge. Dirkx (1998) states transformative learning theory is a powerful image for understanding how adults learn and the researcher made meaning of the participants in their collaborative setting. Co-construction of knowledge between participants and the researcher was employed to understand the individual experiences of each teacher, to promote critical reflection about the instructional planning process, and to engage in dialogue to understand how the participants' view their world and their experiences. The researcher created a safe and trusting environment to foster a collaborative structure that promoted critical dialogue and self-directed learners (Mezirow, 1991).

The research questions for both phases of the study were derived from the gaps in the research literature regarding teacher planning and professional development. Servage (2008) indicates there is a gap between the model of professional learning communities in theory and the way it actually looks in practice. Professional learning communities (PLC) employs best practices and pedagogical skills that focus on student learning, but does not promote critical reflection. The researcher used communication skills and observations of teachers in their natural settings to seek out applicable ways to create an environment where critical dialogue is promoted for transformation to occur.

The literature regarding professional development indicates that instruction should be based on transformative learning theory to influence the participants' habits of mind (Cahill & Bulanda, 2009). Research shows that traditional professional development operates under a faulty theory of teacher learning. The one-time workshop assumes the only challenge facing teachers is a lack of knowledge of effective teaching practices and when that knowledge gap is corrected, teachers will then be able to change, but this is not the case. Teachers' greatest challenge comes when they attempt to implement newly learned methods into the classroom. Evidence strongly indicates the one-time workshops are ineffective (Murphy, 2000) and dialogue, access to resources, and reflection within professional development programs in discussion is essential. Employing transformative learning theory to determine the effectiveness of professional development instructional programs aligns to the confirmatory action research question.

Transformative learning theory literature regarding teacher planning and professional development was primarily qualitative in nature. These findings allow the research community to uncover the perceptions and behaviors of participants, but does nothing to identify systematic procedures for implementing transformative learning as a framework (Dubouloz et al., 2004). Thirteen out of the sixteen empirical reviews found in the literature qualitative in nature with a few studies that measured transformative learning theory concerning faculty professional development (Brashear, 2015). Thus, there is a need to determine effective professional development practices through quantitative and quantitative methods, which was a purpose of this study.

CHAPTER III: METHODOLOGY

This action research study investigated how teachers used instructional planning time to create lesson and unit plans. This information was used to design the professional development intervention using the Understanding by Design unit planning framework aligned with curriculum standards. The intervention was employed, data were collected, analyzed, reflected on, and used by the researcher to improve the Understanding by Design unit planning framework and professional development opportunities.

Research Questions

Needs Assessment

1. What curriculum components do middle school teachers in a local condition use when planning a unit of study?
2. How is common planning time used by middle school teachers to create or modify units of study?
3. How are middle school units of study aligned with curriculum standards?

Action Research Iterations

4. Does providing instructional planning professional development that employs the Understanding by Design framework influence teachers' ability to plan a unit of study aligned to curriculum standards?
5. Does the Understanding by Design unit planning framework transform teachers' capacity to design a unit plan of study aligned to curriculum standards?
6. The teacher-researcher improves her own research praxis.

Research Design

This action research study examined professional development teacher coaching focusing on teacher planning and curriculum alignment using the UbD framework. According to Hendricks (2013), "the purpose of action research is for practitioners to investigate and improve their practices" (Hendricks, 2013, p.4). Action research involves collecting a variety of data sources from qualitative and quantitative measures where the purpose of analysis is to inform practice (Hendricks, 2013).

The researcher's goal as a practitioner in a middle school building was to employ an action research study using teacher professional development to improve unit planning and curriculum alignment. This action research study began exploring how suburban middle school content teachers in a local condition used planning time and curriculum standards when planning units of study. The intervention was then employed to confirm if providing professional development focusing on backward design instructional planning strategies and supports increased teachers' abilities to align curriculum objectives to unit plans and determine if providing professional development focusing on backward design instructional planning strategies and supports transformed teachers' abilities to align curriculum objectives to unit plans. Action research as a methodology allowed the teacher-researcher to improve her own praxis through critical reflection in each cycle (Dick, 2002).

Dick (2002) states action research can be both flexible and rigorous because of the cyclical process. The research study was refined through each cycle as the participants learn more about the problem of practice and if the proposed intervention strategies and measures improved as a result of deep reflection. This process allowed the design to improve in each iteration. The intervention began with a needs assessment of teacher planning and curriculum alignment processes in a local condition combined with a thorough review of the literature to identify professional development intervention strategies, and how to train teachers to use backward design instructional planning strategies and supports to align curriculum standards to unit plans. Action research involved various iterations of action, and after each cycle, the researcher employed a reflective component for the researcher and the participants designed to improve the intervention and the participants and teacher-researchers own praxis. For example, after the needs assessment uncovered how teachers used their planning time, the researcher

reflected on the process and the participants reflected on their planning to identify an applicable professional development that meet the needs of middle school teachers as they improved the process of unit planning. Critical reflection of the intervention in practical, applicable measures of performance, and participant's views of the applicability and value of the intervention and measure in each iteration allowed all participants to make improvements to their own teaching praxis and the intervention that developed from disconfirming evidence. Each iteration informed the following iteration of unit planning and allowed for modification based on evidence, known as the action research spiral (Dick, 2002).

The needs assessment in this study was based on a constructivist paradigm where open-ended interviews, direct observations, behavior checklists, secondary sources, and administrator and teacher survey data was collected and analyzed to uncover, describe, and explain how teachers planned units of study using curriculum standards during common planning time. This information with knowledge gained from the literature review informed the applicable professional development training and measures designed to improve current instructional planning practice. The intervention iteration of the research study assessed whether the professional development intervention (Cooper, 2000) effectively assisted teachers with designing unit plans aligned to curriculum standards in science and language arts content areas and if they transformed their instructional planning practices.

Intervention

The intervention in this action research study employed the Understanding by Design framework and professional development using Cooper's (2009), *Professional Development: An Effective Research-Based Approach*. This model focused on coaching teachers how to plan effective lesson and unit plans aligned with curriculum standards.

The four-step intervention consisted of a structured professional development framework for instructional planning, aligning standards, instructional coaching, and feedback during the weekly meetings. The value of this model for effective professional development has been demonstrated over years and includes theory, demonstration, practice with feedback, and peer coaching with follow-up (Joyce & Showers, 2002).

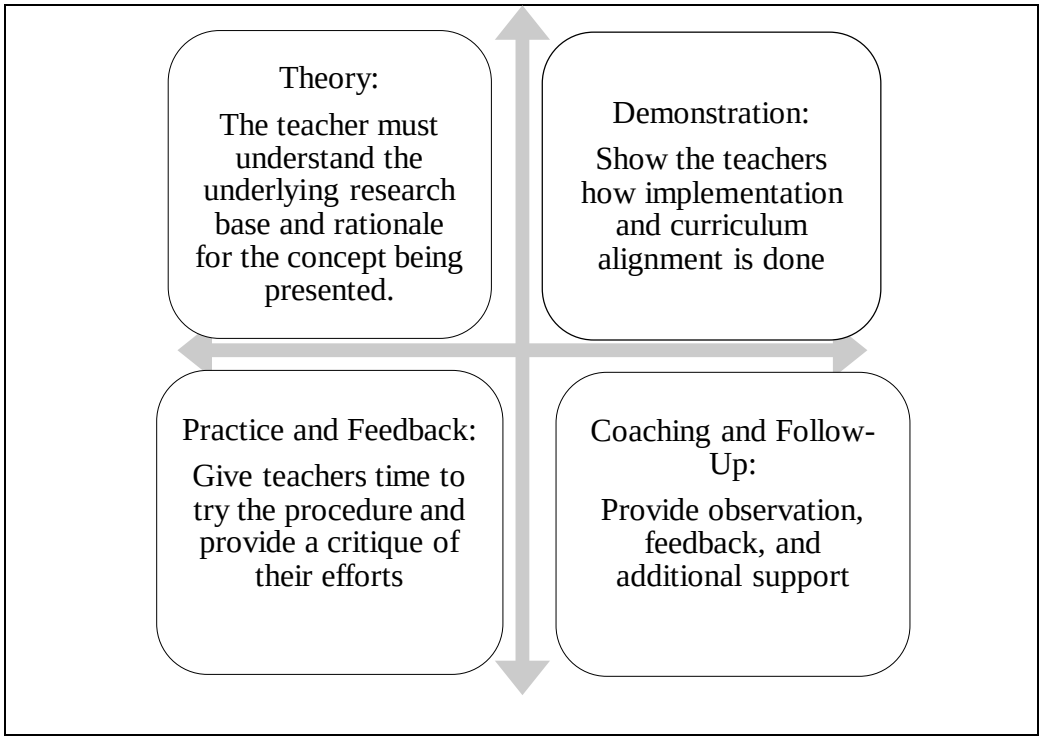

Figure 1. The model for effective professional development that was employed during the intervention process (Cooper, 2000).

The intervention was implemented during regular weekly scheduled teacher common planning meetings. The teacher-researcher acting as a coach for the professional development intervention initially met with participants in each iteration to discuss and explain the theory behind and influence of effective lesson planning and curriculum alignment using UbD backward design (Wiggins & McTighe, 1998). The coach-researcher demonstrated the lesson and unit planning process by modeling during the professional development training sessions and

collaborated with the participants to discuss the process and clarify teacher-participant questions over an eight-week period. Consistent instructional coaching and follow-up ensured effectiveness of the UbD framework assessed using the Marzano Unit Plan Rubric (2011) (see Appendix A). The rubric aligned with the backward design of unit planning. The researcher and teacher-participants in both iterations worked together collaboratively to design the unit of study. The coach-researcher implemented the action research process to ensure fidelity of the professional development intervention.

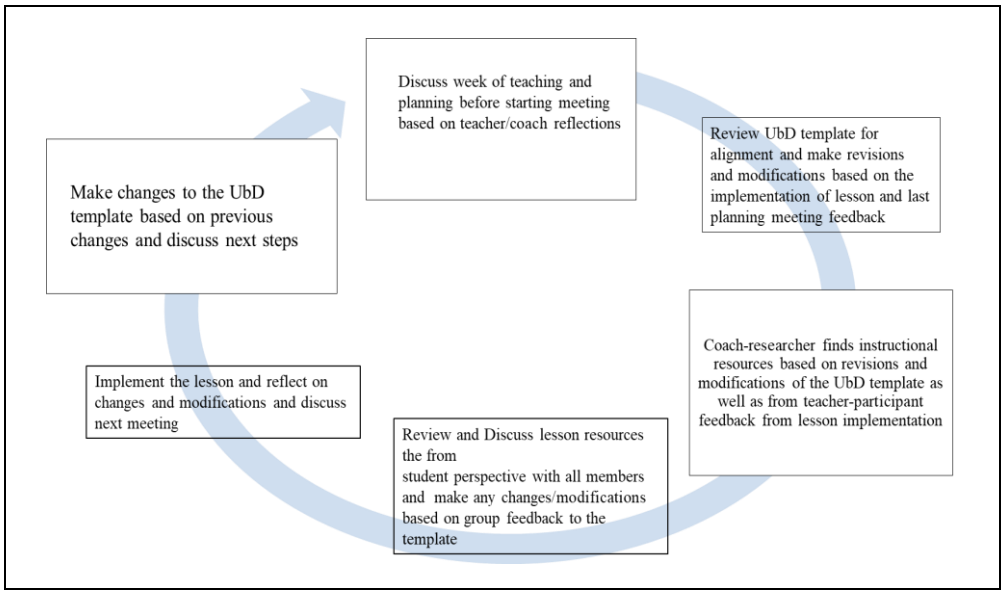

Figure 2. The action research cycle process during the professional development intervention weekly meetings.

The Understanding by Design (UbD) framework (Wiggins & McTighe, 2005) was employed during the professional development training in order to assist teachers to create an aligned unit plan of study to curriculum standards. The backward design approach to curriculum development included three steps; identify desired results, determine acceptable evidence, and plan learning experiences and instruction (Reynolds & Kearns, 2017).

According to Reynolds and Kearns (2017), "as a curriculum development model, UbD is recognized as a means to foster enduring understanding and to promote the transfer of

knowledge to real-life applications" (Reynolds & Kearns, 2017, p. 37), which was a purpose of this action research study. The UbD framework template (see Appendix B) employed during the professional development workshop assisted participants to construct effective unit plans of study aligned to curriculum standards.

Teacher-participants kept reflective journals throughout the professional development intervention to identify discussion points and reflect on the instructional planning process. According to Hendricks (2013), a reflective journal is a place to store information that comes from private, internal thoughts and conversations with others" (Hendricks, 2013, p. 36).

Role of the researcher and Positionality

The researcher during this action research study embraced a pragmatic ontological, epistemological and axiological worldview. Pragmatism is not committed to one system of philosophy, but rather, draws form both quantitative and qualitative assumptions when collecting, analyzing, and merging data in the research study (Creswell, 2014). The researcher in this study took on an emic role during the needs assessment because the researcher and the participants co-constructed meaning from the data. This included observation field notes, open-ended and focus group interviews, reflection logs, and field notes. The researcher took on an etic stance when analyzing the participants' behaviors, teacher planning, and curriculum standards designed units of study. According to Creswell (2012), constructivist researchers often address the processes of interaction among individuals. They also focus on the specific contexts in which people live and work in order to understand the historical and cultural settings of the participants. A goal of research was to rely as much as possible on the participants' views of instructional planning time focused on unit planning.

The researcher took on an etic role when analyzing Marzano's behavioral observation checklist and Unit Planning Rubric, the UbD Unit Planning checklist, and the professional development feedback form. The researcher also took on a post-positivist, confirmatory stance when introducing the intervention and measuring the results. This study sought to determine if providing Professional Development focusing on instructional planning strategies and supports increased teachers' abilities to identify starting points for their teaching, outline the sequence of activities, and align daily lessons to curriculum standards. Thus, the problems studied reflect the need to identify and assess the causes that influence outcomes and measure if the professional development training functioned as expected. The researcher also sought to determine fidelity of implementation.

Overall, this action research study was situated in a pragmatic stance as the professional development training was observed to determine if long-term effects occurred based on the intervention of the study. Collecting both qualitative and quantitative data strands allowed the researcher to compare and construct knowledge as well as increase the validity and credibility of the study.

Positionality

As a former classroom teacher and current technology integration specialist, my personal experiences influenced my perspective and viewpoint regarding instructional planning and curriculum alignment. I have gained insight to the instructional planning process from the building, department, and district level and gained an intimate understanding of the collaboration process and experiences of my colleagues. This has lead me to a pragmatic worldview where understanding and employing "what works" to solve a problem is paramount. I carefully

determined the possible ramifications of familiarity when considering how to attain the most accurate data and resulting findings from this study.

Table 1: *Researcher's Worldview Matrix*

Worldview	Constructivism	Post positivism	Pragmatism
Ontology: Reality or what exists.	Participants will create their reality through the interactions they experience with the team of teachers, the researcher, and the content specialist	Participants and researcher will construct truth and reality through the professional development intervention process as they transform their practice through scientific measures as measured by the Marzano Rubric and using the UbD framework	Participants will uncover their perspectives during the experience of the interviews, observations, and intervention. They will come to know how their perspective is shaped though the process of understanding unit planning design
Epistemology: How knowledge is constructed?	The researcher and participants will co-construct knowledge. Based on the data gathered from interviews and observations in teacher planning meetings, the researcher will gain insight into teacher perceptions and behaviors about the planning process and designing units of study.	Knowledge will be constructed by providing a professional development intervention. Collection of unit plans created during the intervention will be analyzed using the Marzano (2011) unit planning matrix in order to determine the effectiveness of the intervention through observations, interviews, and unit plan collection will determine the effectiveness of the professional development intervention over time. The researcher will take on a constructivist role during the unit plan construction and a post-positivist role during the analysis	Researcher and participants construct meaning from the data. Triangulation of Iteration 1 and 2 data strands (interviews, observations, secondary sources) will inform the effectiveness of intervention. Participants will construct knowledge with coach during implementation of intervention as the construct unit plans with their colleagues
Axiology: What is the role of the values?	The purpose is to allow teachers and the researcher to uncover the process teachers experience when planning units of study. Researcher and participants will negotiate their shared understanding of interview and observation data.	During the intervention phase teachers and researcher will work together to practice and reflect upon the unit planning process. The researcher will take on an emic role. Teachers and the researcher will design their own unit plan during the intervention. The researcher will take on an emic role	In the intervention stage, the researcher will be aware of her role as a coach and understand her bias as a teacher and a colleague. An emic and etic stance will be taken at different times throughout the research study in order to improve the local conditions in the building.

	The researcher will stay true to the participants' perspectives and not seek immediate change.		
Methodology: What is the process of research?	Quantitative Strands during needs assessment to uncover teacher planning perceptions and behaviors to inform phase I of the study Will consist of dialectical process. Inductive approach	Quantitative and Qualitative strands during Iteration 1 and 2 to determine effectiveness of professional development intervention. The results of the intervention protocol will be determined and analyzed in order to determine the effectiveness of the intervention (Marzano Planning Rubric, 2011).	Multiple forms of data will be collected and analyzed from Iteration 1 and 2 to interpret the data, uncover obstacles and strategies to improve the local conditions The intervention will be used to construct effective units of study using backward design

Bounding the case

The focus of this study was to understand the instructional planning process and procedures at the middle school level in order to improve and inform a professional development instructional planning model. This study took place at a suburban middle school in the Northeast region of Connecticut with a student population of approximately 850 students in sixth through eighth grade and a staff of 90 classroom teachers. Site selection was for convenience (Collins, 2010, Patton 2014) as the researcher and teacher-participants had an established collaborative working relationship at the site. Participant selection criteria were limited to one middle school and sixth grade science and language arts content teachers in the same building. The research took place between May 2019 and January 2020. The needs assessment ran from May to September and the professional development intervention included two iterations conducted in each content area. The participants from the needs assessment were the same in the intervention iterations. Iteration 1 and 2 began October and concluded in January. Iteration 1 included three science teachers. Iteration 2 included two language arts teachers. The coach-researcher was a

part of the unit planning collaboration process in both iterations. This was a request of the teachers who felt the coach-researcher should be a part of the intervention process from start to finish because they needed instructional support.

Table 2: *Participant Demographic Profile*

Participant #	Gender	Certification	Current subject and grade level	Total years of experience	# of years teaching current subject and grade
1	F	Elementary K-6	Science 6	20	10
2	F	Elementary K-6	Science 6	28	24
3	F	Elementary K-6	Science 6	10	5
4	F	Elementary K-6 Special Education K-12	Language arts 6	10	5
5	F	Elementary K-6	Language Arts 6	10	3
			Mean	15.6	9.4

Purposive sampling criteria was employed as the researcher had an established relationship of trust and collaboration with the participants. The three science teachers volunteered because they needed instructional support due to the new curricula (NGSS). The two language arts teachers volunteered as they struggled with aligning the broad Common Core Standards to specific unit plans of study for several years. The participants brought a desire to improve their current practice of lesson and unit design to

the study and had a willingness to share their perspectives and progress throughout the research study.

This research project was approved by the University of Bridgeport's Institutional Review Board (IRB). The researcher met with all participants and explained the purpose of the research study, which included communication regarding the overall purpose, the professional development workshop intervention, the backward design of unit planning template, and the Marzano Unit Planning Rubric (see Appendix C). The participants were assigned pseudonyms to protect their identity.

Data Collection

Surveys. The needs assessment ended with an administrative survey (see Appendix D) and a teacher survey (Appendix E) distributed via email to 49 building staff member (46 building content teachers in grades 6-8, 3 building administrators). The results of the survey gave the teacher-researcher an overall picture of instructional planning time and professional development needs from multiple perspectives and levels. The responses focused on the purpose and effectiveness of instructional planning time and curriculum alignment. Analysis of the needs assessment and constructs from theories and findings from the literature review were used to create the survey questions.

Instructional planning observation field notes. Direct observation and field notes were collected during the needs assessment. The observations were based on the districts common planning meeting expected behaviors and the Marzano unit planning checklist behaviors. This data was collected during ten weekly common planning meetings with team teachers, as well as during three monthly department meetings and one district meeting that were facilitated by district curriculum leaders. Direct observations were conducted in order to describe in detail

what was taking place in the setting and to understand what occurred with teacher planning and curriculum alignment (Patton, 2014). These meetings were a part of the weekly and monthly expectations for all teachers at the site.

The researcher used field notes to record and transcribe the ten observations. A two-column template (see Appendix F) was used to record the observations. The left column was used to record the actual observations and the right column for noting preliminary interpretations of what the researcher observed. This allowed the researcher to begin to identify emerging patterns from the data (Mertler, 2014). Observation field notes were digitally recorded and transcribed. The researcher listened to the digital recordings and simultaneously read the transcripts to ensure accuracy. Each observation lasted approximately 45 minutes. The observation data was then compared to the survey results to further uncover teacher and administrator perceptions of the instructional planning process and to inform the development of the open-ended interview questions.

Behavior checklists. The researcher included three behavior checklists while observing the participants. The first checklist identified if teachers used a template created by the district during planning meetings and if meeting norms were being followed according to district and building expectations (see Appendix G). The second checklist (see Appendix H) identified if teacher instructional planning incorporated the Marzano Instructional Unit Planning Behavior checklist. The third checklist was the UbD Unit Planning checklist (see Appendix I). The data was compared with the field notes, meeting minutes, secondary sources and survey results to further inform the needs assessment. This same process was employed during iteration 1 and 2.

Open-ended individual interviews. The researcher conducted open-ended interviews to gain an in-depth response about people's experiences, perceptions, and knowledge about teacher

planning and curriculum alignment (Patton, 2015). Interview questions were created from constructs from Marzano Teacher Planning and the findings from empirically based studies in the literature to further understand the instructional planning and curriculum alignment process from the teacher and administrator perspective. Interviews were conducted with five purposefully selected participants in September 16, 2019. Each interview was digitally recorded and transcribed and the researcher listened to the digital recordings and simultaneously read the transcripts to ensure accuracy. Each interview lasted approximately 30 minutes. The researcher used an interview guide during the open-ended interviews (see Appendix J) to ensure consistency of the questions with each participant and to document probing questions. The questions were carefully worded and arranged in order to ensure each interviewee was taken through the same sequence (Patton, 2015).

Secondary sources. The researcher collected **s**econdary source documents pertaining to department and district instructional planning policies. The sources include building, department and district meeting agendas and handouts, building, department and district instructional planning expectations documents, district curriculum documents (science and language arts), existing teacher lesson and unit plans, district curriculum documents. A document matrix (see Appendix K) was used to organize and compare the documents to identify curriculum standards and instructional planning procedures. The researcher also kept analytic memos throughout the researcher process (Saldana, 2016).

Researcher self-reflection. The researcher wrote analytic memos throughout each iteration of the action research process (see Appendix L). Reflection was a key component in the action research process and thinking about coding during each iteration increased the researcher's critical thinking process as well as challenged her assumptions (Rodgers, 2018).

Reflection provided the opportunity to improve the intervention and measures at each iteration. Memo writing ensured the researcher employed constant comparisons with the data. Glaser (2004) states, "comparative reasoning in memos undoes preconceived notions, hypotheses, and scholarly baggage while at the same time constantly expanding and breaking the boundaries of current analysis "(Glaser, 2004, p. 17). The process of memo writing allowed the researcher to create a history of decisions made when continuously reflecting upon her assumptions, assisted with understanding unanswered questions, made insightful connections with the data, and future research decisions (Saldana, 2016).

UbD lesson and unit plan template. Participants began the professional development intervention the first and second week of October, 2019. The first week, three science teachers met with the coach-researcher to review the overall research process and intervention, review the Marzano rubric and the UbD template, and to clarify any issues before beginning the professional development training. The researcher explained and presented the theory behind the professional development intervention framework. The teacher-researcher modeled the UbD backward design strategy with participants using a unit plan that was designed using the framework. The researcher and participants then practiced the skills required to develop a unit plan together by creating a two-day lesson sequence using the backward design template. This allowed teachers to practice the skills of unit planning, ask clarifying questions and receive immediate feedback, which aligned with the literature regarding effective professional development (Cooper, 2000). This same process was repeated the second week with the science participants and the coach-researcher.

During the professional development intervention, each content group met one day per week with their colleagues and the coach-researcher to plan and align instruction to curriculum

standards. Teacher-participants and the coach-researcher used the NGSS, CCStandards, district curriculum documents, UbD template, and the Marzano Unit Planning Rubric to assist with the unit planning process. The teacher-participants and the coach-researcher continued to meet as a group during common planning time (1x per week for 45 minutes), which was a district mandate. Grade-level content teachers had regularly scheduled time built in to their schedule to meet with their content colleagues to plan instruction.

Teacher-participants in science and language arts, along with the coach-researcher created a unit of study using the UbD framework. Data collection consisted of one unit of study per content group and accompanying scaffolded lesson plans. Two completed Understanding by Design unit framework templates (see Appendix M) were collected from participants and the coach-researcher with unit plans and scaffolded lessons using the Marzano Planning Rubric and the UbD Planning Checklist.

Marzano unit planning rubric. The coach-researcher scored each unit and the results were compared to the UbD Planning checklist. This informed the professional development model and assisted in answering the research questions for both iterations.

Participant reflection logs. Participants kept weekly reflection logs during each iteration (see Appendix N). Participants also conducted pre and post reflections (see Appendix O) on their unit planning process. The pre and post reflections were completed prior to the professional development intervention for participants to describe their current process for planning and designing units of study. Participants were asked to address the decisions they made in writing and identify desired results aligned to curriculum standards. They also wrote about the decisions they made regarding choosing a final assessment or performance task for a unit, and the sequence of learning plan activities and tasks.

The topics of reflection aligned with the UbD unit plan template employed in iteration 1 and 2. The post reflections asked the participants how their current process of planning and designing units of study compared with the new process of professional development reflecting on the same aspects from the pre-reflection. The entries were used as topics and discourse for our weekly planning meetings. Participants identified positive and challenging aspects of unit planning.

Focus group interviews. Two focus group interviews were conducted at the end of each intervention iteration. One focus group consisted of three science participants and the other focus group consisted of two language arts participants. The interviews focused on the professional development intervention process, the analysis of the unit plans, and the reflection log discussion points.

Professional development intervention participant feedback. All teacher participants completed a professional development feedback assessment form (see Appendix P) at the end of each iteration individually. The feedback form allowed participants to identify if the professional development intervention was effective, practical, clear, helpful, and if the coach-researcher was knowledgeable and supportive (Guskey, 2013).

Data Analysis

Survey. Descriptive statistics were employed to analyze the survey responses collected from the on-line administrator and teacher survey during the needs assessment of the study. Survey Monkey software was used to calculate the percentages of yes/no responses for each question. The survey data provided an overall representation of instructional planning procedures, resources, and needs from the teachers and administrators' perspective. The data were formulated and graphically represented using the statistics provided by Survey Monkey.

Behavior checklists. Each instructional planning checklist was analyzed using descriptive statistics in order to summarize the data (Teddie & Tashakkori, 2009) from the needs assessment. The analysis of the behavior checklist was also compared to the survey, open-ended interviews, secondary sources, field notes, and researcher observation reflection notes.

Open-ended interviews and observation field notes. Manual coding was employed for each individual open-ended interview and field note transcript during the first iteration. This allowed the researcher to manipulate the data with more control during the initial coding process (Saldana, 2013). The researcher took memo notes (Charmaz, 2014) about the data in order to develop tentative ideas about codes (Maxwell, 2013). Initial coding of the interviews and observations was employed in order to define implicit meanings and actions of the teacher planning and curriculum alignment process and give the researcher further directions to explore. Initial coding was employed to develop categories. Each transcript was individually coded in the first cycle. The second cycle employed focused coding to identify themes from each participant (Saldana, 2016). The open-ended interview themes were compared with the direct observation field notes themes in order to find similarities and differences in the data (Maxwell, 2013). Themes uncovered were compared to the theories and empirical evidence in the literature regarding teacher instructional common planning time and professional development effectiveness.

Secondary sources. Descriptive coding was used to analyze secondary source documents to determine if the teacher lesson plans, meeting agenda notes, building meeting expectations align with the district curricula documents. Data analysis of the documents were compared with the surveys, interviews, and direct observation field notes and behavior checklist

to gain a deeper understanding of teacher and administrator perceptions and procedures about unit planning and curricula alignment.

UbD lesson and unit plan template. The data analysis determined whether teacher-participants and the coach-researcher collaboratively designed a series of scaffolded lesson plans and a unit plan aligned with curriculums standards in each iteration using the UbD framework. The completed UbD template was compared with the Marzano Unit planning rubric in order to assess teacher-participant and coach-researcher effectiveness in each iteration.

Marzano unit planning rubric. The Marzano Lesson and Unit Plan Rubric was analyzed in order to assess the effectiveness of teacher unit planning design, which was based on a 0-3 scale. The data analysis helped determine whether the professional development intervention increased teachers' capacity to plan instruction as demonstrated by the Marzano Unit Planning Rubric (Marzano, 2011).

Participant and Researcher reflection logs and Focus group interviews. The researcher recorded and transcribed verbatim each focus group interview. Manual coding was employed for each group interview transcript during the first cycle coding. Initial coding of the interviews was employed in order to define implicit meanings and actions of the professional development intervention process and give the researcher further directions to explore. Focused coding was employed to develop categories. Each transcript was individually coded in the first cycle. The second cycle used focused coding to identify themes from each group and identify broad themes from each content area group (Saldana, 2013). The initial codes were further analyzed to form categories generate broad themes. The participant and researcher reflection logs and the focus group interview analysis helped determine teacher transformation and the influence of the UbD framework on teacher instructional planning.

Professional Development Participant Feedback Assessment. The researcher read and coded each question on the feedback form to identify similarities and differences among respondents. The overall analysis gave the coach-researcher and teacher-participants an understanding of the usefulness of the professional development intervention and the value of the instructional coach support. The data analysis assisted in supporting the analysis of the all other data strands in Iteration 1 and 2.

Data Merging

Data merging occurred during and after the data analysis process. According to Creswell and Plano Clark (2011), "mixing during data analysis occurs when the quantitative and qualitative strands are mixed during the stage of the research process when the researcher is analyzing the two sets of data" (p. 67). The quantitative and quantitative data results were organized in a side-by-side comparison chart. Meta-inferences were drawn from each iteration of the research study. The researcher combined the findings into a narrative and create a visual model of the data strands (Banner, 2016). The meeting observation field notes and open-ended interviews were combined and reviewed with the participants to ensure their perceptions were accurately represented. The results of the survey and observations were triangulated with the open-ended interview responses.

The researcher compared the pre and post reflections and wrote a narrative in order to describe the changes in the participants' thinking. The researcher also compared the Marzano Rubric scores for each group in order to answer the intervention research question. The focus group questions were used to triangulate the pre and post reflections and the open-ended interview data from the needs assessment phase.

Credibility, Reliability, and Validity

Trustworthiness of the findings were established by examining the credibility and dependability of various data sources (Mertler, 2014). The research study began within the constructivist paradigm collecting qualitative data to determine how teachers plan a unit of study using curriculum standards. The validity procedures reflected in this thinking present criteria such as trustworthiness and authenticity (Creswell & Miller, 2000). The researcher observed teachers during their planning time, collected artifacts (lesson plans, meeting agendas, district curriculum documents), observation field notes, and conduct semi-structured interviews and administered a teacher and administrator survey.

Quantitative reliability refers to the consistency of collected data. Kirk and Miller (1986) identify three types of reliability referred to in quantitative research, which relate to: (1) the degree to which a measurement, given repeatedly, remains the same (2) the stability of a measurement over time; and (3) the similarity of measurements within a given time period. There are several methods of determining the reliability of data (Mertler & Charles, 2011), such as test-retest, equivalent forms, and internal consistency. Internal consistency is a statistical estimate of the reliability of a test that is administered only once. This type of reliability estimate is most useful for classroom teachers conducting research (Mertler, 2014). Validity and reliability share an important relationship. It is possible for scores obtained from an instrument to be reliable but not valid. It is important to always remember the following adage: A valid test is always reliable, but a reliable test is not necessarily valid (Mertler & Charles, 2011).

In order to confirm if providing professional development focusing on instructional planning strategies and supports can increase teachers' abilities to use starting points, activity outlines, and curriculum goals and objectives to plan a unit of study, the researcher employed

specific protocols in order to establish validity (Creswell & Miller, 2000). The professional development intervention instrument in this study was implemented to test the hypothesis. As Golafshani (2003) states, a quantitative researcher needs to construct an instrument to be administered in standardized manner according to predetermined procedures. The significance of this test is to ensure replicability or repeatability of the result. The researcher must ensure the results are replicable as well as accurate (Golafshani, 2003). The professional development intervention for each unit plan was assessed using Marzano Unit Planning Rubric (2011) and the Understanding by Design Unit Planning Checklist. This helped ensure the data analysis was consistent for each group of participants. The researcher analyzed all unit plans.

This research study included multiple participants (i.e., content teachers and administrators) and multiple data sources (i.e., direct observations, behavior checklists, open-ended, focus group interviews, secondary sources, reflections, professional development feedback form, meeting minutes). The data was thematically coded into categories and analyzed in order to compare all data points to the literature to determine it the intervention was appropriate. Patton (1980) describes this process as one where qualitative research qualitative analysts return to their data "over and over again to see if the constructs, categories, explanations, and interpretations make sense" (Patton, 1980, p. 339).

This study consisted of multiple data source triangulation and respondent validation of thematically coded findings with participants in the study (Glesne, 2006). Prolonged engagement and persistent observations added to the credibility of the study findings. This process allowed the researcher to develop trust with participants, learn the culture of the setting, and observe patterns of behavior (Glesne, 2006).

Credibility of the inquirer

The researcher employed reflexivity during the research process, continuously examining and questioning the inquiry process. This included a report identifying level of experience, personal perspective, accessibility to the site and participants, prior knowledge, and personal connections with participants and topic being studied. Identifying a researchers' predispositions and making biases explicit will help to establish credibility (Patton, 2014).

This study employed member checking, triangulation, thick descriptions, peer reviews, and external audits to demonstrate the validity of the conclusions (Creswell & Miller, 2000). Hendricks (2013) states that "credibility can be increased by collecting multiple forms of data and triangulating the data sources "(Hendricks, 2013, 9. 124). This action research study followed suggestions including multiple participants (i.e., content teachers and building administrators) and multiple data sources (i.e., survey, direct observations, open-ended and focus group interviews, secondary sources, and reflection logs), transcribed, coded for themes and categories, and analyzed to compare all data points to the literature.

In addition, the research study confirmed that providing a professional development intervention model focusing on instructional planning strategies and instructional coaching supports increased teachers' abilities to use starting points, activity outlines, and curriculum standards to plan a unit of study. The intervention instrument explained the procedures and training modules as well as measured if those trained learned and used the intervention. As Golafshani (2003) stated, a quantitative researcher needs to construct an instrument to be administered in standardized manner according to predetermined procedures.

Engaging in an intensive, long term involvement

This study was conducted over a sixth-month period to ensure the researcher collected sufficient data about specific situations to support credible data analysis and results. The researchers' prolonged presence and existing relationships with participants as colleagues ruled out artificial associations and premature theories (Maxwell, 2013). As an insider, the researcher did not need a significant amount of time for participants to accept her and the purpose of the research because the researcher had knowledge of teacher instructional planning and curriculum alignment process as well as teacher time constraints in the work setting. There was an established collegial relationship between researcher and teacher-participants.

Using Rich Data

The researcher was able to collect rich data from the open-ended and focus interviews, direct observation field notes, behavioral checklist, professional development feedback, participant and researcher reflection logs and the meeting minutes. The interviews were transcribed verbatim and Initial Holistic and In Vivo coding was employed to develop codes and categories that accurately captured the participants' perspectives. The field notes were coded to uncover the participants' actions during department and district instructional planning meetings. The data was compared to the interview transcripts and codes to determine if what teachers say coincided with what they do in their planning meetings. This data provided detailed descriptions of the setting and the shared experiences of the participants, which added to the validity of the findings (Creswell, 2013).

Searching for discrepant evidence and negative cases

The researcher examined data that did not fit with the emerging themes and patterns from each phase of the research cycles because to uncover specific topics that emerged regarding instructional planning time. The researcher looked for negative cases, which broadened

understanding of the patterns about what occurred (Patton, 2014). Considering alternative explanations added credibility by showing the researcher is authentic in searching for what makes sense rather than directing all of the data toward a single, predetermined conclusion. In fact, "perfect patterns and omniscient explanations are likely to be greeted skeptically – and for good reason: The human world is not perfectly ordered, and human researchers are not omniscient" (Patton, 2014, p. 656).

Respondent Validation

The researcher also employed respondent validation (member check) in order to systematically solicit feedback about the data and conclusions from the participants. This was the most important way of ruling out the possibility of misinterpreting the perspectives or biases and misunderstandings of what is observed (Maxwell, 2013). Accuracy of the qualitative findings was determined by giving the participants the emergent themes from the open-ended and focus group interviews, direct observation field notes, reflective logs, behavior checklist results, and the researchers' reflection notes to confirm the accuracy of the researchers' interpretations (Creswell, 2014). The researcher presented the overall findings to the participants for confirmation. The participants then had an opportunity to clarify their thoughts about the researcher's conclusions, which helped to validate the findings.

Triangulation

Triangulation was used in order to determine and if results from the multiple data strands were consistent and to allow for comparisons to be made and analyzed. The researcher analyzed the open-ended and focus interviews, direct observations, behavior checklists, meeting minutes, pre-post participant reflections, administrator and teacher survey, professional development evaluation feedback, and the secondary sources to gain a broader understanding of the

phenomenon and to determine if the intervention assisted teacher-participants to create a unit of study as well as transform their instructional practices (see Appendix Q). The researcher also triangulated the different perspectives of teachers and administrators within the organization (Creswell, 2014).

CHAPTER IV: RESULTS

This action research study sought to determine if providing Professional Development focusing on instructional planning strategies using the Understanding by Design Framework (Wiggins and McTighe, 2005) increased teachers' abilities to identify starting points for their teaching, outline the sequence of activities, and align daily lessons and unit plan of study to curriculum standards, which was found in the research study. Transformational learning theory relevant to understanding and influencing teacher instructional methods and habits of mind (Cahill & Bulanda, 2009) guided this study. Quantitative and qualitative data were used to uncover how teachers used planning time to design instruction, understand whether existing lesson plans and units of study aligned with district curriculum standards, and determine if providing instructional planning professional development using the UbD framework affected teachers' ability to align a unit of study to curriculum standards.

Needs Assessment

The needs assessment analysis answered three questions: What curriculum components do middle school teachers in a local condition use when planning a unit of study? How are middle school units of study aligned with curriculum standards? How is common planning time used by middle school teachers to create or modify units of study? The results of the needs assessment revealed the middle school teachers did not use district curriculum documents to create an aligned unit plan of study. Lesson plans and units of study did not align with district curriculum standards. Common planning time was unstructured, did not have a specific purpose, and did not incorporate aligning lesson and unit plans to curriculum standards.

Qualitative data strands.

Planning meeting minutes, field notes, and open-ended interviews. The analysis of the science and language arts building, department and district planning meeting minutes and the researcher field notes resulted in 15 focused codes. The codes were further collapsed and five pertinent themes emerged; Time, Planning, Resources, Frustrations, and Leadership. Table 3 operationally defines the codes associated with planning time meeting minutes, researcher field notes, and open-ended interviews.

Table 3: *Planning Meeting Minutes, Field Notes, Open-Ended Interview Codes*

Theme	Operational Definition
Time	Time constraints during planning and implementing instruction during common planning time prior to the intervention.
Planning	Instructional planning process employed during building, department, and district common planning time prior to the intervention.
Resources	Lack of instructional resources when designing or modifying instruction during common planning meetings prior to the intervention.
Concerns	Teacher frustrations regarding the instructional planning process during building, department, and district meetings prior to the intervention.
Leadership	Instructional support at the building, department and district level.

Time. Time constraint was a major theme for science and language arts teachers at the building, department and district level. At the building level, teachers expressed the pressure they felt to cover content, complete grading, and find time to search for instructional resources during their common planning time. Teacher 4 expressed, "We need more common planning time for planning effective lessons, grading, and time to meet with colleagues." In all building level common planning time meetings, teachers planned instruction based on covering the content within a specific time frame. Teacher 2 referred to the time she allocated to students to complete a task when she stated, "They have two days to basically do it." Teachers expressed frustration with the time constraints they dealt with in their building planning meetings and how

time constraints affected their lesson and unit design as evidenced by Teacher 4 who stated, "We never have time to do it in the way it really should be done – ever!"

Time constraint was a major theme at the science and language arts department and district level planning meetings as well. During a language arts department meeting, multiple teachers expressed they did not have enough time to cover and plan for all of the Common Core Standards in a 43-minute planning period. Another issue regarding time constraints was the need for teachers to collaborate with special education to modify instruction. A teacher stated, "We need more common planning time with special education." Time constraints influenced teachers' ability to modify instruction for all learning levels. In the science district planning meeting, teachers expressed they did not have time to learn all of the new NGSS standards and effectively create lesson and unit plans.

The researchers' field notes also indicated science and language arts teachers rushed to cover content in order to fit it in before the end of the school year. Teachers also worried about assigning activities that took too long to grade, which influenced lesson and unit design.

Time was an emergent theme in the science and language arts open-ended interviews. All five teachers expressed the need for additional, structured planning time, as evidence by Teacher 4 when she stated, "Our PIRR (common planning time) time does not get used efficiently. We often are catching up with each other about where we are with lessons since there is not a solid outline for most of our units." The two language arts teachers indicated creating new lessons was not part of their planning time because their curriculum lacked specific unit learning objects, student skills, and aligned final assessments. In addition, science and language arts teachers expressed the need for adding more planning time because the allotted

time was not enough due to non-instructional issues that interrupted planning. Teacher 5 revealed:

> "Our time is also taken up with non-curriculum related items – goal setting, data collection, upcoming LA department meeting agenda items, district-wide assessment planning and we end up meeting other times throughout the week to better collaborate."

Planning. The planning process was an emergent theme at the science and language arts building, department, and district level as it was the focus of all meetings. At the building level in science and language arts, teachers spent most of their time trying to plan lessons for content that they were currently teaching and they did not use curriculum documents during planning meetings. Teachers reviewed their past lesson plans and projects in order to modify instruction, but past lessons were not aligned with curriculum standards. Lesson sequence did not consist of scaffolded lessons aligned to curriculum standards or a unit of study, as was stated by Teacher 1, "It's not like it is a part of a unit, it's a quick mini lesson." Teacher instructional planning was rushed and focused on simple, task oriented, stand-alone lessons as was indicated by Teacher 5 when she stated, "well, we can tell students you have two days and you have to get this many facts." In both content areas, teachers struggled with creating cohesive units of study due to the broad and thematic Common Core Standards and the new NGSS standards.

Planning at the science and language arts department and district level consisted of curriculum leaders instructing teachers on how they should plan lessons and units in both content areas. The language arts curriculum leader suggested teachers focus on the "Big Ideas" of the standards to help them begin aligning lesson and unit plans. The curriculum leader expressed the future goal for language arts was to create six new cohesive units that "will fit naturally with the anchor set of standards so it is seamless."

The science curriculum leader used department and district meeting time to review the NGSS standards and the Marzano teacher goals. The purpose of the meetings was for teachers to think about their goals aligned with the science standards, and learn the new NGSS standards. The purpose of the science district meeting did not align with teacher expectations as was evident when the curriculum leader asked the group, "What are your hopes for this meeting? What are you hoping to walk away with?" A teacher responded, "I hope to walk out of here with real resources I can use with my students to teach the NGSS standards." The curriculum leader responded, "That is a good thing, but today that is not going to happen because the focus of this meeting is to think about NGSS with regards to SLO (Student Learning Outcomes) goals. Teachers did not use any department or district meeting time to modify or create instruction.

The researchers' field notes revealed science and language arts teacher-planning meetings at the building level were unstructured and did not have a specific purpose. Teachers in both content areas planned final assessments after a series of lessons. Teachers did spend planning time reviewing, modifying, and improving their current lessons. Teachers tried to incorporate technology in their final assessments when possible and were motivated to improve their instruction. Language arts teachers struggled with creating units that contained thematic standards. In addition, all building planning meetings experienced off-task behavior, which caused teachers to lose important planning time. The researcher also found that teachers did not create new lessons during planning meetings. Their focus was on modifying existing lessons. Teachers in each content area had established professional and respectful relationships where everyone's perspective was valued. These teachers worked well together and had positive attitudes.

The open-ended interview analysis revealed science and language arts teachers referred to planning as the process they used to plan instruction during their common planning meetings and the challenges they faced. Science and language arts teachers indicated planning lessons aligned to unit plans was a difficult task because they did not have an aligned district curriculum document with a scope and sequence for each unit of study, which made designing instruction challenging as indicated by Teacher 1 when she stated:

> "We have a very hard time because we don't have a solid curriculum in place - units with teaching points, a final assessment, and resources – so we end up using PIRR to plan day to day and if we are lucky week to week."

In addition, science and language arts teachers indicated the need for an aligned district curriculum with clear instructional objectives, student skills, and scaffolded lessons aligned to unit standards.

Resources. Lack of instructional resources was another emergent theme revealed from the planning meeting minutes in science and language arts. All teachers spent the majority of science and language arts building meeting time searching for existing instructional resources in their computer files or on the internet for resources as they planned instruction. This was evident when Teacher 1 stated, "She sent it to me in the Google drive, but then I saved it somewhere else and I can't find it." Teachers in both content areas did not have a shared central location for existing lesson and unit plans or resources. Science and language arts teachers spent planning time searching for resources as they tried to differentiate instruction. Language arts teachers spent time contemplating the availability of specific books. Teacher 4 stated, "So, can we even possibly get the books, I don't know if I will have them on time." Science teacher 3 stated, "We have less manipulatives for students to use in labs. Now, we are only using coffee stirrers and

clay." Teachers in both content areas also cited a lack of clarity with resources, including lacking directions or specific steps to take when implementing resources.

Resource scarcity was evident at the department and district level in science and language arts. Teachers did not receive tangible instructional resources that aligned with specific lesson designs and materials were general and broad. Science teachers received K-12 learning targets, which were an overview and list of standards. Language arts, teachers received an overview of how to make meaning with text. Teachers in both content areas received theoretical resources that focused on aligning standards and understanding learning. All teachers expressed the need for resources that directly affected their lesson design and provided guidance for modifications. At a language arts department meeting, one teacher stated, "Giving student's choice makes planning more difficult, because of the needed resources in reading material."

The researcher's field notes indicated finding resources took up a significant amount of planning time in science and language arts content areas. All teachers used planning time to search the internet to find lesson activities and resources. Existing lesson resources were not stored in one, central location in and there was no resource database at the department or district level. Science and language arts curriculum leaders sent general resources to teachers via email or internet links and teachers spent time sifting through the information.

The open-ended interview analysis revealed science and language arts teachers referred to resources as information or documents needed to align lesson and unit plans with curriculum standards. Science teachers indicated the new NGSS standards created a need for new resources and the impact on lesson design. Teacher 1 stated, "We don't have a textbook and there are many new NGSS standards. We have to figure out on our own what to teach with limited

resources. We need more assistance with unit planning and creating lessons and assessments and gathering resources."

Concerns. Teachers in science and language arts at the building, department, and district level voiced concerns and frustration with the entire planning process. Science and language arts teachers expressed the process of continuously modifying their existing lessons and unit plans was difficult. Teacher 3 stated, "I think adding the research makes it better, but I don't know how to add it." Teachers also expressed frustrations with rushing to cover content when planning their lessons. Teachers lacked time and felt rushed which caused them not to be confident with the final product. Teacher 4 said, "I wish we had more time…I feel we don't have that. Any decision we make I am not going to be a hundred percent behind it." Language arts teachers felt frustrated with the modification process as a whole. They spent year after year modifying lesson and unit plans that inaccurately aligned with curriculum standards. Teacher 4 stated her frustration to the content specialist when she expressed, "Yes. Because we are creating and now recreating it again." Science and language arts teachers have not had adequate planning time to review, reflect, and revise before implementing their lessons.

Science and language arts teachers were also frustrated at the department and district level. During a language arts meeting that focused on the "new vision" for curriculum implementation, teachers were confused about the vision. One teacher stated, "I don't even know what the vision is." Teachers were also confused about how to adequately differentiate instruction with the guidelines of the new language arts model and felt they needed coaching to help them design instructional lesson plans. One teacher stated, "I need coaching on teaching in a thematic way," and, "I need to know what tools are available to us so we can help them with their independent work." Science teachers expressed frustration because the new NGSS model

has been “confusing and complicated” and effective planning time would help them to design aligned lesson and unit plans. Science teachers expressed frustrations in learning the new standards while trying to plan instruction. Science and language arts teachers were frustrated because they wanted additional department and district meeting time allocated for specific instructional planning.

The researcher’s field notes also uncovered science and language arts teacher frustrations with the quality of existing lessons and unit plans. A language arts teacher stated to the researcher that because she was worried about covering content, it compromised her lesson design. Teacher 4 stated, “I am not proud of any units because everything is half------.” The researcher also identified science and language arts teacher frustration came from lack of leadership support with lesson design and unit alignment. Teachers were frustrated at the science district meeting because it was September of the new school year and they did not know what they were teaching, and the meeting time focused on teacher goals. One teacher turned to me and expressed, “we have to start all over again and we don’t have a cohesive framework for planning.”

Leadership. Leadership in regards to instructional support varied at the building level between science and language arts. Science teachers received limited support because they did not have a building content specialist and language arts teachers received support from the language arts content specialist. Language arts teachers felt supported by their leader regarding her knowledge of the Common Core Standards and sixth grade content. The content specialist provided positive feedback when possible and offered resources during two planning meetings. The resources given to teachers needed modification because they were at a 7^{th} and 8^{th} grade

level. During two planning meetings, the content specialist had to leave early for another duty. The leader was flexible and positive during all meetings.

Leadership at the department and district level consisted of the science and language arts curriculum leaders. In both content areas, the leaders were prepared for the meetings and had clear goals. The message in both content areas was the need for vertical and horizontal alignment as well as creating units aligned with Common Core and NGSS standards. In addition, both leaders encouraged teachers to take risks with their lessons and try new things, as evidenced by the science leader when she stated, "Try something new with the standards and your goals." Science and language arts teaches did not receive any resources that directly aligned with classroom instruction and curriculum alignment. The science and language arts district meeting expectations did not align with teacher expectations.

The researcher field notes revealed leadership goals at the department and district level did not align with teacher expectations. Teachers wanted practical resources they could use in their classrooms, while the meetings revolved around a theoretical framework of the standards. Curriculum leaders were very prepared for the meetings, had positive attitudes, and gave positive feedback, but there was a lack of tangible resources and planning structure for teachers.

Quantitative Data Strands.

Secondary sources. *Teacher lesson plans* revealed none of the science and language arts teacher lesson plans (10 per content area) aligned to unit objectives or to essential questions (0 out of 20). In science, three out of ten lesson plans aligned to a specific assessment. In language arts, two out of ten lesson plans aligned to a specific assessment.

Content-specific unit plans. Science had six teacher-created unit plans and language arts had five teacher-created unit plans. Data analysis revealed none of the teacher-created unit plans

aligned to specific unit objectives (0 out of 11). In addition, only one unit in science and one unit in language arts had an essential question (2 out of 11). All units in science and language arts identified student tasks, but the instructional strategies and student skills did not align to curriculum standards (0 out of 11). All units in science and language arts included an assessment, but the assessments aligned to student tasks and not to specific curriculum standards (0 out of 11).

District curriculum document artifacts. The district curriculum document for science included four unit plans of study. The data analysis revealed none of the units (0 out of 4) had aligned objectives to specific units of study. All four units had an overview list of objectives, but none aligned with specific units. Two of four units included essential questions. The other two units shared the same essential question for different content topics. None of the units (0 out of 4) had instructional strategies or student skills aligned to curriculum standards, nor did they have specific aligned assessments in any unit of study (0 out of 4).

The language arts district curriculum document included nine units of study. The data analysis revealed none of the units had aligned objectives to specific units of study. None of the units had essential questions aligned with curriculum standards. The curriculum document contained an overview list of 16 essential questions, but none aligned to specific units of study. None of the units of study had instructional strategies or student skills aligned to curriculum standards, nor did they have specific assessments aligned to units of study. Each unit of study contained a list of Common Core Standards emphasized in a unit, but none aligned to specific units of study.

Science district planning meeting artifacts. The district meeting handouts for science consisted of, *Conceptual Shifts in the Next Generation Science Standards* (NGSS, 2013), a

theoretical research article, *How People Learn, Bridging Research and Practice* (1999), and an NSTA Blog article, *Implementing the Next Generation Science Standards: How Your Classroom is Framed is as important as what you do in it* (2014). None of the articles (0 out of 3) aligned to specific district unit objectives, essential questions, instructional strategies and student skills, or units of study assessments. Finally, the meeting agenda outlined the goal of the meeting, but the goal did not align to specific district unit objectives, essential questions, instructional strategies and student skills, or units of study assessments.

Science department planning meeting artifacts. The two-science department meeting handouts consisted of the NGSS Science and Engineering Practices, Grades 3-12 Targets, a district academic expectations crosswalk template (2019), a research article, *Planning for Engagement with Big Science Ideas* (2018), and an article from Michigan Radio, *This mom helped uncover what was really going on with Flint's Water* (2015). None of the articles (0 out of 4) aligned to specific district unit objectives, essential questions, instructional strategies and student skills, or unit of study assessments. In addition, the curriculum leader created a meeting PowerPoint which focused on the broad crosscutting science concepts and how to plan for phenomena-based instruction as an overview. The PowerPoint resource did not align to specific district unit objectives, essential questions, instructional strategies and student skills, or units of study assessments. Finally, the meeting agenda outlined the goal of the meeting, which was for teachers to continue to develop an understanding of the NGSS and increase their ability to plan for high quality science instruction based on the expectations of the NGSS. The meeting agenda goal did not align to specific district unit objectives, essential questions, instructional strategies and student skills, or units of study assessments.

Language arts department planning meeting artifacts. The meeting agenda included meeting norms and the goal focused around what worked and what did not work in language arts. There was one handout, *The Making Meaning Protocol*, (Baron, 2017). The handout gave an overview of six ways to make meaning with any text, but it did not align to specific district unit objectives, essential questions, instructional strategies and student skills, or units of study assessments.

District planning expectations behavior checklist. The analysis of the district planning behavior checklist uncovered that building common planning time meetings in science and language arts did not incorporate meeting agendas, unit planning forms, district curriculum documents, or a textbook. The analysis also revealed all participants contributed to the planning meeting, planned common lessons, and had positive attitudes. In two out of three science meetings, teachers arrived on time. In one out of three language arts meetings teachers arrived on time. In science meetings, only one meeting was observed where all participants were taking notes and planning for next steps. In two language arts meetings participants were taking notes and planning for next steps. The language arts content specialist was not leading the building planning meetings.

In the two science and language arts department meetings and one science district meeting an agenda guided all meetings. The researcher did not observe a unit planning form, district curriculum documents, or a textbook used in any meetings. All participants did not contribute to the meeting, plan common lessons, had positive attitudes, took meeting notes, or attended meetings on time. All meetings did plan for next steps and the curriculum leaders lead all three meetings.

Marzano planning behavior checklist: The Marzano behavior checklist identified if teachers provided evidence of implementing lessons and unit plans aligned to grade level standards using learning targets in a performance scale during common planning time meetings. The analysis of the behavior checklist in science and language arts uncovered zero out of 12 planning behaviors were observed at six building meetings, two department meetings, and one curriculum meeting.

Language arts direct observation planning meeting checklist. The direct observation checklist analysis of the three building meetings revealed teachers did not follow a specific meeting structure or had a defined purpose. There were no visuals projected in the meeting for participants to follow. There were no common materials shared. In two meetings, one teacher used a computer to find student resources for a final assessment. Every meeting had at least three interruptions, which caused off-task conversations to occur and consumed twelve additional minutes of planning time. All three meetings ended before the allotted planning time of 45 minutes.

The direct observation checklist analysis of the language arts department meeting revealed the curriculum leader followed a specific structure and the meeting had a defined purpose. The meeting had a PowerPoint projected from a screen, which included a meeting agenda and teacher discussion questions. The meeting did not have common handouts for all participants to view. Teachers discussed the talking points verbally. There were two interruptions in the meeting, but they did not take the meeting off-task.

Science direct observation planning meeting checklist. The direct observation checklist analysis of the four building meetings revealed teachers did not follow a specific meeting structure or had a defined purpose. There were no visuals projected in the meeting for

participants to follow. There were no common materials shared. A teacher used a computer in all meetings to search for resources. All four meetings had at least two interruptions, which caused off-task conversations to occur and consumed 37:58 minutes of planning time. All four meetings ended before the allotted planning time of 45 minutes.

The overall findings of the secondary sources and checklist data strands uncovered science and language arts teachers at the building level did not create and modify lesson and unit plans aligned with curriculum standards during common planning time meetings. In addition, it was also uncovered that at the department and district level in science and language arts, collaborative planning time did not include creating and modifying lesson and unit plans aligned with curriculum standards.

Administrator and teacher survey. The results from the survey gave the researcher an overall picture of instructional planning time and professional development needs in a local setting from multiple perspectives and levels. The responses focused on the purpose and effectiveness of instructional planning time and curriculum alignment from the administrator and teacher perspective. The researcher emailed the administrator survey to three building administrators and all three responded to the survey. The researcher emailed the teacher survey to 46 building content teachers. The teacher survey generated 24 responses representing a 52.17 % response rate. The researcher summarized the results of the survey by each question in a table and included a narrative.

Table 4: *Purpose of Planning Time*

Teacher Survey	Responses			Administrator Survey	Responses		
Question	Yes	No	Other	Question	Yes	No	Other
1. The purpose of PIRR in my building is to design and modify lesson and unit plans aligned to curriculum standards.	14	2	8	1. The purpose of PIRR in your building is for teachers to design and modify lesson and unit plans with curriculum standards.	3		

Purpose of planning time. The three administrators and 14 teacher respondents (58.33%) agreed the purpose of PIRR was to design and modify lesson and unit plans aligned to curriculum standards. All eight teacher respondents (33.33%) who chose *other* indicated although teachers agreed with the purpose, they also stated meeting time was used for other things. One respondent indicated, "I believe that is the purpose, but it is usually not the focus. Our meetings usually discuss how the district assessments and rubrics do not really meet the objective of the unit."

Table 5 *Adequate Planning Time*

Teacher Survey	Responses			Administrator Survey	Responses		
Question	Yes	No	Other	Question	Yes	No	Other
2. I have adequate planning time during PIRR to create unit plans aligned with curriculum standards.	9	14	1	2. Teachers have adequate planning time during PIRR to create unit plan aligned with curriculum standards.	3		

Adequate planning time. All three administrators indicated teachers had enough planning time during PIRR to create lesson and unit plans aligned to curriculum standards, while 14 (58%) teachers indicated they did not have enough planning time during PIRR. The one teacher respondent (4.17%) who chose *other* indicated creating aligned lessons and unit plans was not done during planning time meetings.

Table 6: PIRR Meeting Time and Meeting Agendas Survey Question

Teacher Survey	Responses			Administrator Survey	Responses		
Question	Yes	No	Other	Question	Yes	No	Other
3. PIRR time is strictly used to design unit plans that are aligned with curriculum standards	1	21	2	3. Receiving agenda and /or minutes from PIRR is an expectation in your building.		3	

Question three revealed 21 teacher respondents (87 %) were not using PIRR planning meetings strictly for designing unit plans aligned to curriculum standards. The administrator question uncovered that a meeting agenda was not an expectation for common planning time meetings, even though it was an expectation at the district level.

Table 7 *Available Resources*

Teacher Survey	Responses			Administrator Survey	Responses		
Question	Yes	No	Other	Question	Yes	No	Other
4. I have the available resources I need to create unit plans that are aligned with curriculum standards.	12	9	3	4. Teachers have the available resources they need to create unit plans that are aligned with curriculum standards.	3		

Resources. All three administrators indicated teachers had adequate resources needed to create unit plans that aligned with curriculum standards during their planning meetings. Teacher responses where split regarding this question. Twelve respondents (50%) indicated they had enough resources to plan units during their planning meetings, while nine respondents (37.5%) indicated they did not have enough resources to plan units during their planning meetings. The three respondents (12.5%) who chose *other* indicated they had access to resources, but only because they were able to search the internet during their meeting time. One respondent stated, "Somewhat – only in the sense that I have access to the internet which allows me to search for materials and resources."

Collaboration. Question five asked administrators and teachers about the importance of collaboration and the unit planning process. The three administrators and 22 teacher respondents (91.67%) indicated collaboration with colleagues during PIRR was an important component to designing unit plans aligned to curriculum standards.

Table 8 Curriculum Leader Support

Teacher Survey	Responses			Administrator Survey	Responses		
Question	Yes	No	Other	Question	Yes	No	Other
6. My Curriculum Leader offers instructional support for unit planning and curriculum alignment.	14	6	4	6. Curriculum Leaders offers instructional support for unit planning and curriculum alignment.	3		

Curriculum leaders and instructional support. All three administrators indicated curriculum leaders offered instructional support for unit planning and curriculum alignment to teachers. Although 14 teacher respondents (58.33%) indicated they received instructional support from curriculum leaders, six respondents (25.0%) indicated they did not receive instructional support from curriculum leaders; and the four respondents (16.67%) who chose *other* stated they received support if they asked for it, or were sent resource links via email from the curriculum leader. One responded indicated, "Yes but it can make things more confusing/complicated at times. Department meetings do not typically offer support from the curriculum leader about unit planning."

Table 9 *Administrator Support*

Teacher Survey	Responses			Administrator Survey	Responses		
Question	Yes	No	Other	Question	Yes	No	Other
7. My building administrators offer instructional support for unit planning and curriculum alignment.	13	6	5	7. As a building administrator, you offer instructional support for unit planning and curriculum alignment.	3		

Administrators and instructional support. All three administrators indicated they offered instructional support for unit planning and curriculum alignment to teachers. Although 13 teacher respondents (54.17%) indicated they received instructional support from their building

administrators, six respondents (25.0%) indicated they did not receive instructional support from their building administrators; and the five respondents (20.83%) who chose *other* stated they received support if they asked for it or they indicated "not really." One respondent stated, "They are attempting to offer us instructional time to plan units but district meetings get in the way."

Table 10 *Instructional Professional Development*

Teacher Survey	Responses			Administrator Survey	Responses		
Question	Yes	No	Other	Question	Yes	No	Other
8. Instructional PD helps me effectively design unit plans aligned with curriculum standards.	4	13	7	8. Instructional PD helps teachers effectively design unit plans aligned with curriculum standards.	2		1

Professional development. Two of the three administrators indicated instructional professional development helped teachers effectively design unit plans aligned with curriculum standards. The one administrator who chose *other* indicated, "Yes, in a sense, but I feel strongly that teachers need more time and more direct instructional PD." On the other hand, only four teachers indicated instructional PD helped them effectively design unit plans aligned with curriculum standards; and 13 teacher respondents (54.17%) indicated instructional PD did not help them effectively design unit plans aligned with curriculum standards. In addition, the seven teacher respondents (29.17%) who chose *other* indicated it depended on the PD, but most of the time it was not helpful. One respondent stated, "Some of the Instructional PD we have done over the years has been effective, but most has not."

Table 11 *Additional Instructional PD*

Teacher Survey	Responses			Administrator Survey	Responses		
Question	Yes	No	Other	Question	Yes	No	Other
9. I would benefit from additional instructional PD that focuses on designing unit plans aligned with curriculum standards.	18	5	1	9. Teachers would benefit from additional instructional PD that focuses on designing unit plans aligned with curriculum standards.	3		

Additional instructional professional development. The three administrators indicated teachers would benefit from additional instructional professional development that focused on designing unit plans aligned with curriculum standards. Eighteen teacher respondents (75.0%) indicated they would benefit from additional instructional professional development that focused on unit planning and curriculum alignment, while five respondents (20.83%) indicated they would not benefit from additional instructional professional development. The one respondent (4.17%) who chose *other* indicated they have an understanding about how to design unit plans generally aligned to standards. The respondent also stated, "I struggle with being the one to have to make some curricular/unit decisions. I would want more input or guidance from higher ups."

Additional information. The last question (question10) on both surveys asked respondents to include any additional information regarding lesson and unit planning design and curriculum alignment. Only one administrator responded by thanking the researcher for allowing them to be a part of the survey. Twelve teachers (50.0%) responded to question ten. The researcher coded each response for commons categories.

Time. Five respondents indicated the need for more effective planning time. One respondent indicated administrators designated little time for designing lessons and units; and when administration did allocate time, it was unstructured. Another respondent stated, "I want to use our grade-level department time more effectively and efficiently. I want our work at that time to be more meaningful." Respondents indicated having more planning time to create and plan instruction would be more beneficial to them, rather than receiving additional professional development. One respondent stated, "Most PD is worthless."

Resources. Two of the responses related to lack of resources. One respondent expressed professional development needed to focus on specifics about how to align and plan instruction,

rather than focus on generalizations about how to plan. Another respondent stated, "We are implementing a new curriculum next year but do not have enough resources and have not been given enough time for creating these new units."

Curriculum alignment. Five respondents indicated the need for curriculum alignment at the district level in order to effectively create and align lesson and unit plans at the department and building level. Teacher-created units did not align with curriculum standards, which affected lesson design and common assessments. One respondent explained the difficulty with alignment in science when stated, "In my content area, our curriculum could use tweaking and the teacher created district assessments and rubrics need to change drastically." Respondents also stated they understood the benefit of planning backwards, but that would not be possible until the alignment occurred with the district curriculum documents.

Iteration 1 and 2

The first and second iteration data analysis answered the following two research questions; 1. *Does providing instructional planning professional development that employs Understanding by Design framework influence teachers' ability to plan a unit of study aligned to curriculum standards?* 2. *Does the Understanding by Design unit planning framework transform teachers' capacity to design a unit plan of study aligned to curriculum standards?*

Participants in the first and second iteration reported through their weekly reflections, focus interviews, and the professional development reflection assessment that the intervention positively influenced the lesson and unit planning alignment process and transformed teachers' capacity to design an aligned unit of study using the Understanding by Design framework. In Iteration 1 and 2, the data analysis from the planning meeting minutes and the researcher reflections supported the findings from the participant data strand results based on each UbD

final unit plan of study and accompanying lesson plans. The quantitative data strands included the Marzano Unit Planning Rubric, Marzano planning behavior checklist, and the Understanding by Design checklist. The quantitative data analysis indicated participants were able to create an aligned unit of study and scaffolded lesson plans. These findings supported the qualitative data analysis in Iteration 1 and 2.

Iteration 1 and 2 Qualitative data strands

Participant pre-reflections. The participant pre-reflection data analysis provided information about existing teacher instructional planning decisions before the implementation of the intervention in Iteration 1 and 2. The pre-reflection data included teacher decisions regarding final assessments for a unit of study, how existing units aligned to curriculum standards, positive aspects of the current instructional planning process, and challenging aspects of the current instructional planning process.

Final assessment decisions. In Iteration 1, the three science teachers indicated they made final assessment decisions based on the topic of the lessons and made assessment decisions at the middle or end of the unit. Science teachers also indicated they used lab activities based on specific skills as a final assessment. Science teachers revealed the need for changing their current process of final assessment decisions as evidence by Teacher 3, "There are things we do that we can keep, but some things must change. We have to change the way we think and instruct."

In Iteration 2, the two language arts teachers also indicated they made final assessment decisions at the middle or end of a series of lessons or unit. Both teachers indicated they made final assessment decisions based on the student tasks as evidenced by Teacher 5, "We end up looking at the lesson/skills we have been teaching throughout the unit and then plan an

assessment based on those lessons/skills we taught." Both teachers also indicated they used the previous year's lessons to assist them in determining assessments for the current year and that their current process needed to change as evidence by Teacher 4, "Information from the previous year helps determine what steps to take in the unit. Often, we are selecting the skills during the beginning of the unit, not ahead of time. It is not the best approach."

Unit of study and curriculum alignment. In Iteration 1, the three science teachers indicated existing unit plans did not align with district curriculum standards. Teachers expressed that due to the implementation of the new NGSS standards, they lacked new resources to guide them in the alignment process. The new standards shifted instruction from teacher-centered to student-centered, which further affected unit-planning alignment. Teacher 1 stated, "We have to get kids to ask questions that make them think and not just the teacher telling them the answer." Lack of resources affected the unit planning and alignment process prior to the intervention.

In Iteration 2, the two language arts teachers indicated there was general alignment with standards. The broad language arts standards were addressed in a single unit and teachers did not refer back to them when designing lessons or student assessments. Teacher 4 stated, "Our unit plans are generally tied to the standards, but not because we are purposefully analyzing the standards during planning time." Teacher 5 also indicated, "We assume our units are aligned to curriculum standards based on what we've done in the past, but don't refer back to them regularly because they are very broad."

Positive aspects of planning. In Iteration 1, science teachers indicated that although the new NGSS standards made planning difficult this past year, they did experience positive aspects to instructional planning. Teachers indicated they liked the fact that the new standards changed instruction to student-centered, which took the burden off teachers and gave the responsibility of

thinking to students. Teacher 2 stated, "The shift is positive and teacher questions are more thought-provoking and we answer a question with a question to get students to think." This allowed teachers to take more risks with instructional planning.

In Iteration 2, language arts teachers indicated collaboration with colleagues during planning time was positive because they all worked well together and shared effective and ineffective instructional practices with each other as evidenced by Teacher 5, "My colleagues and I work well together…We're good at discussing what worked/didn't work and modifying lessons based on our discussions." Teachers also indicated a positive aspect of planning was the flexibility they had in designing instruction rather than following a lock-step plan as evidence by Teacher 4, "I do like that we have flexibility with our planning because I do not want a step-by-step or day-by-day plan." Teachers also indicated they did want a more structured plan than what they already have.

Challenging aspects of planning. In Iteration 1, science teachers indicated the new standards and curriculum structure, along with limited resources and support made creating aligned units of study challenging. All teachers expressed the need for horizontal alignment in order to allow planning to occur with colleagues in other buildings. In addition, teachers indicated the need for leadership support with unit planning and alignment. All teachers indicated a need for support with creating lessons and assessments, as well as gathering resources to plan a unit, as stated by Teacher 2, "I have no guidance on what to teach, and need assistance planning units and getting resources."

In Iteration 2, language arts teachers indicated the lack of a focused language arts curriculum and limited instructional resources due to the broad Common Core Standards made planning challenging and caused planning time to be inefficient as evidenced by Teacher 5, "Our

lack of curriculum, leads us to spend more time planning than we should have to." Teachers also indicated one day per week was not enough planning time to design instruction and grade student work. Teachers also expressed they struggled with understanding the specific expectations of the language arts units and they needed more guidance with making instructional decisions as evidenced by Teacher 4, "I feel that we need more guidance with designing units to ensure all students are receiving comparable experiences. I feel that there are too many decisions to make when planning our units and not enough time to do it."

Iteration 1 Participant weekly reflections. The participant weekly reflection data analysis in Iteration 1 provided information about the intervention process from the science teacher-participant perspective and if the process transformed the participants' thinking regarding the unit planning process. The reflection logs asked participants to reflect on the following during the intervention process; their changes in thinking, the process of collaboration, challenges to the planning process, and to add any *other* additional information about the planning process.

Changes in thinking about planning. The analysis in Iteration 1 revealed the common themes among the science teachers regarding changes in thinking were alignment process and perspective. Teachers referred to alignment as the Understanding by Design unit planning process. In the first two reflections, teachers indicated they were not used to thinking about the final student assessment before starting a unit. Teacher 2 stated, "I am not used to thinking about the end product and what we want students to know and then plan backwards." Teachers changed their thinking about the alignment process as the professional development intervention progressed. Teachers indicated in their reflections that they understood the importance of establishing unit starting points, essential questions, and performance task assessments in the

early stages of designing a unit of study. Teacher 3 stated, "I realized I should focus on planning lessons that guide students to the final task and to the learning we want them to gain."

In addition, the three science teachers indicated viewing the instructional planning process from the perspective of a coach who was not a science content specialist gave them new insight into the planning process. Teachers indicated the clarifying questions the coach-researcher asked them during the instructional planning process required them to think about the instructional decisions they were making from the student perspective as evidenced by Teacher 2, "The coach is able to think about how the students will receive or process new information and this has enabled us to approach lessons differently." Teacher 3 also stated, "Being able to plan lessons with someone who is not a science teacher, but wants to plan a meaningful lesson for students has been so helpful." Teachers expressed that thinking about the knowledge they wanted students to walk away with after a unit changed their instructional planning decisions from teacher-centered to student-centered.

Collaboration during the intervention. The common themes among the science teachers regarding collaboration during the professional development intervention were coaching, discourse and modifications. Science teachers described the overall collaboration process as invaluable, extremely helpful, and beneficial to the professional development instructional planning process. Teacher 3 indicated, "I would not have been able to do this work on my own because I need people to share ideas, make new lesson suggestions or changes to current lessons." Teachers also indicated the collaboration process made them less anxious about creating new lessons aligned with the new curriculum, which increased their confidence in the planning process as evidence by Teacher 2, "I am less anxious about the new standards and the process has increased my confidence in delivering lessons."

Science teachers referred to coaching as the supportive role of the coach-researcher during the professional development intervention process. All teachers indicated having a coach was an essential component to the professional development intervention process. Teachers indicated they valued planning time with the teachers and the coach because it was meaningful and purposeful. Teachers expressed having a supportive coach made planning time efficient with better results. Teacher 1 indicated, "The coach was awesome because she took the lead finding resources that enhanced the curriculum." Teachers expressed the backwards planning process was not something they could have done alone as a group of science teachers as evidenced by Teacher 3, "I do not believe the sixth grade teachers would have been able to map out so many NGSS standard aligned lessons without the constant collaboration we have been doing together." In addition, teachers stated an important aspect of coaching was presenting the lesson activities and assessments to them from the student perspective as evidence by Teacher 1, "During our meetings, we learned how to connect students to the lesson purpose throughout the unit."

The common theme of authentic discourse referred to the dialogue between teachers and the coach-researcher regarding lesson design and alignment during the instructional planning process. Teachers indicated the process of brainstorming, sharing, and discussing ideas during meetings influenced their lesson design process. Teachers stated authentic discourse with group members made them feel they were accomplishing their instructional planning goal of designing a unit of study as well as keeping them focused and on track during the planning process. Authentic discourse led to meaningful discussions about lesson resources, delivery and revisions. Teacher 1 stated, "We all have different strengths and when we plan together our minds cover all areas of planning and we make lessons more creative and challenging for students."

The common theme of modifications referred to the continuous process of designing, implementing, and revising lesson activities and assessments throughout the professional development planning meetings. Teachers expressed the process of inputting all daily lessons and resources in the UbD template significantly influenced the alignment and planning process. The UbD template kept all resources organized in one central location and teachers could refer to the standards when designing and modifying lessons. Teacher 2 indicated, "Everything is in order and organized for the week in one place and this helps us keep the activities aligned to the standards and make revisions." Teachers also revealed the modification process encouraged them to review and compare past lessons with new lessons and ensure appropriate alignment to standards. Teachers identified starting points for the unit and continuously modified lesson activities to ensure alignment with the final assessments as evidence by Teacher 3, "Starting with a hook with the water cycle was stronger for the kids and made a more direct connection to the final performance task."

In addition, science teachers expressed the importance of staggered lesson delivery in order to allow for further modifications. During the intervention, Teacher 1 delivered the instruction and discussed the lesson delivery with the group and immediate modifications were made to the lesson template, as evidenced by Teacher 2, "It helps that we are staggering when each teacher will begin the first lesson because we get to learn from each other and get immediate feedback." Teachers also identified the need for further modifications next year to include differentiating instruction for special education students as well as the need for more modified resources.

Challenges during the intervention. The common themes among the science teachers regarding challenges during the intervention process included time and curriculum. Teachers

acknowledged although the UbD alignment process was time consuming, it was necessary to align scaffolded lessons within a unit of study. In addition, the time-consuming process of on-going modifications, reflection and revision was vital to the instructional planning process as evidenced by Teacher 3, "Planning was a lot of work because it was a different way of doing things. I realized good lessons take time to plan and implement." Teachers indicated the need for more collaborative planning time as well as the need for more time to find resources. Teacher 2 indicated, "Time is always an issue. Consistent, uninterrupted time to plan is nearly impossible to get." All teachers worried about time to plan aligned units in the future without coaching or structured support as evidenced by Teacher 2, "The coach was able to work with us weekly, and then she spent hours typing up the lessons and finding resources and testing them out for us." Teachers expressed they would not have such time in the future on their own to effectively plan.

The science teachers identified curriculum alignment as a challenge in their first three weekly reflections. Teachers identified challenges with aligning assessments with the new NGSS standards, finding new lesson resources, and determining lesson sequence. The remaining weekly reflections indicated challenges regarding incorporating more authentic lesson activities and assessments in order to make the content relevant to students. Teacher 3 indicated, "I want to include more hands-on labs in order to connect to students." Science teachers indicated they initially struggled with determining starting points of the unit and with visualizing the final unit of study. Teachers also identified challenges with understanding the appropriate pacing of lessons because this was their first time implementing the unit as evidenced by Teacher 1, "I want to make sure I give enough time to a topic and take notes as we deliver instruction so we can make changes for next year."

Other. The three science teachers added *other* comments to their reflections, which focused on the coaching. Teachers indicated their experience in the professional development intervention with the coach-researcher made them look forward to their planning sessions. All teachers expressed appreciation for the structured, focused, and on-task planning meetings. Teachers expressed gratitude for the coach-researcher's dedication to the success of the teachers and the process as evidenced by Teacher 2, "I missed one session of planning and I felt lost. Elizabeth sat with me and shared what was discussed in the planning meeting so I had a better understanding and vision to prepare for the lesson."

Iteration 2 Participant weekly reflections. The participant weekly reflection data analysis in Iteration 2 provided information about the intervention process from the language arts teacher-participant perspective and if the process transformed the participants' thinking regarding the unit planning process. The reflection logs asked participants to reflect on the following during the intervention process; their changes in thinking, the process of collaboration, challenges to the planning process, and to add any *other* additional information about the planning process.

Changes in thinking about planning. The analysis of Iteration 2 revealed the common themes between the two language arts teachers regarding changes in thinking were alignment and modifications. Alignment referred to the UbD unit planning process and indicated the framework made lesson planning and unit design efficient. Teachers indicated they valued the UbD process because they learned the importance of the backwards planning and curriculum alignment as they tried to narrow the broad Common Core Standards. Teacher 4 stated, "We should have been using backwards design to utilize the standards more often, analyzing and narrowing down which standards best fit what the purpose of the unit is." In addition, teachers

expressed the importance of determining the performance task in the early stages of instructional planning because it allowed them to develop a complete unit of study. Teacher 5 stated, "I realized just how important the alignment of standards, essential questions, and the final task are. Once they are aligned, the unit becomes more cohesive and our final assessment makes sense." Teachers also expressed the UbD process motivated them to take risks with lesson design and promoted an increase in student expectations and thinking.

Language arts teachers referred to modifications as the process of continuous revisions to the scaffolded lessons and unit plan of study. Teachers expressed they realized the importance of continuously reviewing and revising the UbD template in order to ensure alignment and that modifications were completed throughout the process. Teacher 5 stated, "It was important to go back and continuously revise/edit our questions and charts in order to make sure they all connected back to our standards and final task." Teachers also indicated the modification process was efficient because all resources and the UbD template were stored in one central, shared location for all participants to access.

Collaboration during the intervention. The common themes between the language arts teachers in Iteration 2 regarding collaboration during the professional development intervention were perspective and coaching. Both teachers expressed the overall collaboration process throughout the intervention was "extremely helpful" and "excellent". Teachers expressed the group worked well together and the process was successful because of the existing working relationship.

Language arts teachers referred to perspective as viewing lesson activities and assessments from the perspective of someone who was not a language art content expert. This allowed teachers to rethink their past instructional planning practices. Teacher 5 indicated, "It's

nice to have an 'outsider's' objective point of view combined with the current knowledge we already have about our unit. And we all work so well together." Teachers also indicated the collaboration process allowed teachers to begin to design lessons from the student perspective and shift instruction from teacher-centered to student-centered as evidenced by Teacher 4, "It's been helpful having an 'outsider' bringing in new ideas. I really found it helpful to 'think like a student' as Elizabeth did when putting together the first few lessons of the unit. I wouldn't have thought in that way had we not been collaborating." Teachers expressed this process opened them up to new ideas, gave them a fresh perspective and helped them with curriculum alignment.

Coaching was a common theme between both language arts teachers. Coaching referred to the support the teachers received during the professional development intervention process from the coach-researcher. Teachers indicated the support they received from the coach-researcher allowed them to think of new ways of planning instruction and gave them guidance in the unit design process as evidenced by Teacher 5, "I'm learning new ideas/ways of teaching concepts to the students I haven't thought of before, thanks to Elizabeth. After having no guidance, and consistently teaching the same things over and over, she helped us think of new ways of planning."

Language arts teachers indicated they appreciated the coach-researcher validating the past struggles they experienced with lesson and unit planning alignment due to the numerous, thematic Common Core Standards. Teachers expressed they appreciated the coach-researcher acknowledging the difficulty of trying to narrow the standards to one unit, as evidenced by Teacher 4,"It was helpful to have another person who does not teach LA every day and work with our documents also struggle through this work. It validates that it is a challenge, but, when approached in a slightly different way, it is doable." Teachers indicated the coach-researchers'

guidance through the decision-making process was critical because of their indecisiveness, as evidenced by Teacher 4, "My colleague and I are indecisive, and Elizabeth was objective guiding us through the decision-making process."

Challenges during the intervention. The common themes among the language arts teachers in Iteration 2 regarding challenges during the intervention process included curriculum alignment and time. Teachers indicated in their first two reflections that they struggled with aligning the language arts thematic standards into one unit and determining a final performance task. In addition, teachers stated they had a limited understanding of the purpose of their existing unit plans, which made alignment difficult, as evidenced by Teacher 4, "I honestly am not positive what the purpose is for some of our units which means we cannot select specific standards to focus on within a unit." Teachers indicated their confidence increased with choosing the final performance task for the unit of study as the intervention planning process progressed. Teacher 5 stated, "Coming up with a final task for a summative assessment is challenging, but as we've been progressing through this process, I'm confident it won't be as challenging as it currently is for other unit's we plan."

Language arts teachers indicated time constraints continued to be challenging during the intervention, but for different reasons. Teachers indicated planning time during the intervention was efficient and it had a purpose, but they realized backwards planning was a time-consuming process as evidenced by Teacher 5, "Planning is very time consuming, but necessary and fulfilling. The time we spent this year working on this unit will save us a lot of time every year going forward…we'll only have to make minor adjustments." Teachers also indicated they worried if they would have time in the future to backwards plan without the support they received from the coach-researcher during the intervention.

Other. The two language arts teachers added *other* comments to their reflections that focused on the overall alignment process during the intervention. Teachers indicated the UbD planning process increased their confidence in backwards planning, elevated student expectations, and allowed them to create a cohesive unit once the teachers identified the performance task. Teacher 4 stated, "When we reviewed the role descriptions, tasks, and organizers for students during the performance task, it was clear that the chapter questions we had selected…all fit together with our purpose. I am not sure I can say I've felt that way in other units. This unit has had more feeling of cohesion and thoughtfulness than others." Teachers also indicated the intervention planning process also made them realize they have not received adequate instructional planning support in several years.

Iteration 1 and 2

Focus Group Interviews, Researcher Reflections and Meeting Minutes. The analysis of the researcher reflections, focus group interviews, and planning meeting minutes resulted in 15 focused codes. The codes were further collapsed and four pertinent themes emerged; Alignment, Collaboration, Coaching and Commitment. Table 12 operationally defines the themes associated with the focus groups interviews, researcher reflections and meeting minutes for Iteration 1 and Iteration 2.

Table 12 *Focus Group Interview, Reflections and Meeting Minute Themes*

Themes	Operational Definition
Alignment	The participants' perceptions regarding UbD instructional planning and coaching during the professional development intervention process.
Collaboration	Professional working relationship between participants and coach during the professional development intervention process.
Coaching	The UbD framework instructional support during the professional development intervention process.
Commitment	Group member investment during the professional development intervention process.

Alignment. In Iteration 1 and 2, alignment was an emergent theme in the focus group interviews, researcher reflections and meeting minutes. Teacher in both iterations indicated the UbD process taught them how to create and modify a unit of study with scaffolded lesson plans.

In Iteration 1, the analysis of the focus group interviews uncovered science teachers' initial thoughts about the UbD alignment process, which referred to a time sequence rather than a lesson content sequence, changed during and after the intervention. Science teachers expressed they initially planned out their lessons or units based on when the unit should have been completed as evidenced by Teacher 3, "Backwards planning was you want to be finished with weather by February so these are all the things you have to do to finish weather by February…that is how our units used to be. It wasn't we want them to be able to answer what is the structure of the earth's atmosphere by February 1st."

In Iteration 2, language arts teachers initially indicated they had a general understanding about the UbD planning process and that the process made them want to change their previous way of planning. Teacher 5 stated, "I want to stop planning things that have nothing to do with what we're going to do at the end." Language arts teachers also indicated they needed a framework and structure to backwards plan.

In Iteration 1, science teachers indicated the UbD framework changed their instructional planning process. Teachers indicated instructional planning time became efficient because the UbD template had a clear purpose, kept them organized with their daily lessons, and allowed them to store all resources in one place to refer back to when implementing instruction. This allowed teachers and students to have clear daily and long-term expectations as evidenced by Teacher 1:

> "I like the template, I liked when the outline was up on my smartboard for me to see and my students to see and I love how it's just this is what we accomplished today this is what I want to look forward at the end of the week for us to have done and it just sets the tone and sets the whole day lessons in place. That really helped me a lot. I remember having it up and even coming back on a Monday I was able to go right to it helps with planning purposes, I knew what I was coming into today. I think the kids are now expecting to see that and its helping them and the direction they are going in too".

In Iteration 1, science teachers also indicated the UbD framework enabled them to create a cohesive unit of study that included streamlined daily lesson activities and plans. Teacher 1 stated, "UbD gives me the big picture and a complete unit helps me move forward. Before this, we didn't have an umbrella. We just went in and did this page and then we went to the next section using the textbook, not plan all of these separate lessons. We now have a cohesive unit." In Iteration 2, language arts teachers also indicated the UbD process gave them a clear purpose and focus when designing lesson sequence for the unit plan of study. Teachers indicated before the intervention, they did not have aligned sequence of lessons and the intervention gave them the framework they needed to design a streamlined unit with scaffolded lessons as evidenced by Teacher 4, "It gives you purpose – otherwise, we are literally just going to do this because we know they need it, but we don't know where it fits. Should we do this first or that first? That is our biggest challenge – what order to teach things."

In Iteration 1, science teachers indicated the UbD alignment process changed their thinking regarding lesson and unit assessments. Identifying the performance task at the start of the unit allowed teachers to understand the purpose of each lesson and align student lesson activities with appropriate formative assessments. This shift in thinking led teachers to

incorporate authentic performance tasks rather than traditional unit tests they used prior to the intervention as stated by Teacher 3, "I am breaking away. I do not need a bunch of grades and this is where my thinking has totally changed." In Iteration 2, language arts teachers also revealed this shift in thinking. Teachers indicated the UbD process of identifying the performance task taught them how to design scaffolded lessons that connect to the performance task and student skills as evidenced by Teacher 5, "We know these are the skills we want to do, here's the product, and now let's work to make sure we get there."

In Iteration 2, language arts revealed the UbD template was effective and helped them design instruction because it was practical and tangible, not theoretical. The template gave them a systematic structure of designing a sequence of lessons with a purpose. Teacher 4 stated, "This template and process – it's things you can latch on to and make sense of it – it's not super theoretical. It's grounded in tasks."

The analysis of the researcher reflections and the meeting minutes in Iteration 1 and Iteration 2 revealed both groups initially needed support because they were unclear about how to begin inputting and aligning information into the UbD framework template regarding student outcomes and identifying a performance task before starting a unit. The coach-researcher implemented a modification of slowing down the planning process to ensure teachers understood the process before moving on to the next step. In addition, in both Iterations, the coach-researcher continuously reviewed the UbD unit plan template with an existing sample template at the start of each meeting to ensure teacher understanding and proper alignment. The constant process of reviewing the essential questions, performance assessments, unit standards and big ideas helped the coach-researcher clarify confusion, allowed teachers to ask clarifying questions

as they struggled through the new learning and understand the overall purpose of the UbD template as evidenced by the final unit of study created during the intervention.

Constant clarification and review of the UbD planning process was also uncovered in the meeting minutes for Iteration 1 and Iteration 2 as evidence by the coach-researcher when stated to the participants, "I think we were all a bit confused. Let's slow down. So, what we need to do is look at the big ideas again and make sure it is what we want in this unit. Each big idea aligns with each essential question." In addition, all data strands revealed the coach–researcher implemented meeting protocol modifications in both Iterations to ensure effective and focused planning meetings. The coach-researcher began each meeting by reviewing the previous work completed on the template and identified the current meeting objectives.

Collaboration. In Iteration 1 and 2, collaboration was an emergent theme in the focus group interview, researcher reflections and meeting minutes. Teachers in both iterations indicated the UbD process encouraged authentic and meaningful collaboration and dialogue between themselves and the coach-researcher and was essential to the UbD planning process.

Iteration 1 science teachers indicated their existing positive and supportive working relationship was important to the UbD instructional planning process because it allowed them to discuss, design, and implement the framework together. Teachers indicated they felt safe, supported by their colleagues and coach-researcher, and valued their collaborative planning time as evidenced by Teacher 1, "We do all have a good relationship and know each other well and are comfortable. We work together to piece things together."

Iteration 2 language arts teachers also indicated the collaborative process during the intervention planning meetings was productive because of the prior existing relationship between the two teachers and the coach-researcher. Teacher 5 indicated, "Without collaborating, I can't

imagine getting all of the work done that we've been able to without all of us working together and discussing everything at the same time." Language arts teachers also indicated the collaboration process was effective because of the support the coach-researcher gave them during the planning meetings as they struggled to align the broad, thematic CCStandards to a unit of study. Teacher 4 stated, "It's always helpful to have the time to work with colleagues and share ideas and it's especially helpful to have an 'outsider' come in to see how we're struggling and support us in our work."

Iteration 1 and 2 teachers indicated collaboration was effective during the intervention because planning occurred with small groups and every teacher-participant was aware and a part of every instructional decision that was made. Iteration 1, Teacher 3 stated, "We are all part of the process from the beginning and understood why we made certain decisions about lessons. This needs explanations. I can't just open up the outline and be able to send that to someone and say hey this is what we are doing." This was also evidenced in Iteration 2 by Teacher 4 when stated, "The three of us work so well together and we are creating a unit, but I can't just send it to another teacher in another building because she won't really understand the sequence. I will have to explain everything."

In Iteration 1 and 2, the coach-researcher reflections revealed collaboration was an important component to ensuring effective planning meetings and UbD alignment. The coach-researcher indicated both groups had an existing positive working relationship that made collaboration authentic and productive. The coach-researcher began each meeting in both iterations by giving positive feedback about the accomplished work from the previous meeting and allowed time to discuss how participants felt about the planning process. This allowed all participants and the coach-researcher to reflect about the process as they continued planning and

to have continuous dialogue regarding lesson delivery and modifications. The meeting minutes supported this finding as evidenced by the coach-researcher when stated, "I have done some work. I am wondering how you feel so far because I feel it is coming together."

In Iteration 1 and 2, the coach-researcher sought teacher expertise throughout the intervention process regarding specific content standards, resources and sequence of lessons in order to ensure appropriate alignment and to ensure all participants were a part of the decision-making process. The meeting minutes supported this finding when the coach-researcher asked teachers clarifying questions regarding the science content, "So this makes sense? Please tell me when this does not make sense. My question to you is the water cycle falls into this standard, correct?" This finding evidenced in language arts by the meeting minutes when the coach-researcher asked for clarification, "This is where I need a little help and the types of characters. Maybe you do something like this already but I feel there is a gap with the transition." All teachers in both iterations became the leaders at some point in the planning process.

In Iteration 1 and 2, teachers indicated time was no longer as much of a constraint during the professional development intervention because the coach-researcher focused the discussions on specific instructional tasks and participants now valued planning time because it directly affected their classroom instruction. In Iteration 1, Teacher 2 stated, "This planning time has a purpose. Because of collaboration I know my week now will be better once I know what I am doing every day and that makes a big difference. So when I know I have this time and you as a resource I didn't want to waste any of it." Teachers in both iterations compared the effectiveness of the professional development intervention planning meetings with the ineffective department meetings concerning collaboration. In Iteration 1, Teachers stated the reason for ineffective science department meetings was due to the lack of focus on specific sixth

grade curriculum in the meetings and the large group of teachers and varying personalities affected authentic discourse and collaboration. Teacher 1 stated, "I think that is what goes wrong when we have to go to science meetings. We don't focus on sixth grade. There were too many opinions and too many personalities and you're in three different buildings so the logistics of it doesn't work." This was evidenced in Iteration 2 when Teacher 5 stated, "Department meetings are too big and there are too many personalities and decisions to make."

In Iteration 1 and 2, the coach-researchers' reflections and the meeting minutes also revealed efficient planning time was evident during the intervention planning meetings. The coach-researcher implemented a modification in both iterations that ensured planning time focused on specific planning objectives and ensured participants stayed on task. The coach-researcher was prepared for each meeting with specific lesson resources and activities to discuss with the teachers. Teachers gave immediate feedback regarding the resources and the coach-researcher made all corrections or modifications to the UbD template in the meeting. This ensured all teachers understood the changes, were part of the dialogue, and time was used efficiently by limiting meeting interruptions and refocusing off-task behavior. The meeting minutes supported these findings when the coach-researcher stated, "We will start by looking at what we have done since last week's meeting. Today I will review everything I have done and then we can make any changes in the template."

Coaching. Teachers in Iteration 1 and 2 referred to coaching as the support they received from the coach-researcher during the professional development intervention planning meetings. Science teachers in Iteration 1 indicated they felt the coach-researcher did not need to be an expert in the science content area in order to lead the planning process because we all worked together to clarify information. In fact, science teachers expressed planning with a non-content

leader allowed them to view the lesson activities from the student perspective as evidenced by Teacher 1, "You proved that you don't have to be an expert in that content area to align lessons and find all the misinformation. Like we said, this is what they have to learn and then you're like, 'ok, wait a minute, let me find lessons on that', and then we put everything together." In addition, science teachers indicated an important aspect of coaching was getting them to think like a student when designing lesson activities and assessments. Designing lessons from the student perspective allowed teachers to reevaluate their instructional planning decisions as evidenced by Teacher 3:

> "Thinking like a kid has changed my thinking. So having you Elizabeth do the lessons like a kid that's made me start to go back and do it. And so I think that has helped us with planning like seeing it from a different perspective because now we've done some things so many times that we forget that they might not understand".

This was also uncovered in Iteration 2 with the language arts teachers. Both language arts teachers indicated the UbD process changed their instructional planning process because they worked with a leader who was a not a language arts content specialist, which made them rethink their instructional planning decisions because the coach-researcher continuously asked clarifying questions regarding teacher instructional decisions during the planning meetings from the student perspective. Teacher 4 stated, "Your comment to us has changed the kind of lessons we create. When you said 'I'm thinking like a student right now and I'm trying to wrap my head around how I should do this' that right there – that will change my lessons and how I think and plan." In addition, language arts teachers indicated planning from the student perspective increased student expectations because students had to do the work and the thinking, as evidenced by Teacher 5, "I think it helps to make it more student – like put more on the kid.

Because when we didn't know what the end product was we felt like we had to provide so much where now we can say at the end you're going to have to do this."

In addition, language arts teachers in Iteration 2 indicated the support they received during the intervention would not be sustainable because teachers plan instruction with district LA content and curriculum specialists during their planning meetings, as evidence by Teacher 4, "I think what was helpful was that you not really being involved in language arts - that is nice to have. That's not realistic like how things are in the district – it's your curriculum leader, you're language arts specialist and the teachers."

The coach-researcher reflections and the meeting minutes in Iteration 1 and Iteration 2 also revealed being a non-expert in the content area allowed the coach-researcher to think about the lesson resources and activities from the student perspective. The coach-researcher completed all student task activities before each planning meeting, which allowed teachers to review the lesson from the student perspective, anticipate any potential modifications to instructional resources, as well as focus the planning meetings. The coach-researcher stated, "I just want to go over one more thing. I started thinking about lesson three and feel like even after they do their own model I felt like as a kid I need to bring it all together. So I went in and did it as a student and I'm not sure we need the second page."

In Iteration 1 and 2, science and language arts teachers indicated the coach-researchers' preparation that included clear expectations, objectives, and resources promoted effective use of planning time and productive lesson alignment during the intervention. Teachers in both iterations indicated the coach-researcher wanted to design engaging lessons for teachers and performed a great deal of work finding and reviewing specific lesson resources and assessments so teachers did not have to use planning time searching the internet. Teacher 3 from Iteration 1

stated, “You being prepared every meeting helped us all figure things out and you were motivated to make sure we had a good, useful lesson and not just give us a textbook or links to a rabbit hole of information. You definitely did the brunt of the work finding resources. This is what takes us so much time and you did it and we are so grateful.”

In Iteration 2, language arts teacher indicated the coach-researchers’ preparation for every meeting made planning time more effective and changed how time was used in meetings prior the intervention, as evidence by Teacher 5, “Because of Elizabeth’s preparation for every meeting we were able to plan effectively. Way more than PIRRs of the past because we had a focus or a goal for the time. Often meetings were used for miscellaneous items rather than planning purposefully.”

The coach-researcher reflections and meeting minutes in Iteration 1 and 2 also revealed the coach-researcher made specific modifications to ensure effective use of planning time and productive lesson planning. The analysis revealed the coach-researcher employed a meeting protocol, which focused on reviewing all meeting lesson objectives and next steps in every meeting using the UbD template as the guide. The coach-researcher made all UbD template modifications in order to save planning time and ensure consistency with revisions. The coach-researcher found all lesson activities and assessments prior to each planning meeting as evidenced by the coach-researcher, “I went through all of this and made sure it is aligned and streamlined. I made sure that our lesson unit plans match all of the resources in the google slideshow and template.”

The coach-researcher analysis in Iteration 1 and 2 revealed the modification of adding a shared platform with all unit resources in one central location also saved planning time and focused and organized teachers during the UbD planning process when delivering instruction in

the classroom. The UbD unit plan template, all daily lessons and accompanying resources, and assessments were stored in a google drive location for all teachers to access, as evidenced by the coach-researcher, "Ok. So I made the Google slideshow with all of the resources there and the unit template so we can all access them from one place." The analysis of the meeting minute's analysis also supported this finding.

Commitment. In Iteration 1 and 2, commitment was an emergent theme revealed from the coach-researcher reflections and the meeting minutes. The coach-researcher indicated teachers were very eager to start the planning process in both iterations. Science and language arts teachers were motivated and invested in the intervention process from the first meeting, as evidenced by the meeting minutes, "We can't wait for next week so we can begin planning together" (Teacher 2, Science). The coach-researcher indicated science teachers were motivated because they had new NGSS standards to teach and they did not have a district curriculum to guide them. In addition, science teachers were committed to the process because they were able to align their State teacher goals with the intervention. During the first planning meeting, teachers reviewed the intervention research question and decided to make that their goal once they received approval from administration as evidenced by Teacher 1, "Can we use the question for our goals?" The coach-researcher worked with the teachers to align their goals with the intervention once they received administrative approval. Language arts teachers were motivated because they had broad thematic standards they struggled to align with units of study over the past few years and wanted guidance and support in the planning process.

The coach-researcher reflections revealed teachers in both iterations scheduled extra meeting times with the coach-researcher throughout the intervention process in order to complete the planning process. Teachers were motivated to continue planning because they saw the

alignment process was working in the classroom with students as evidence by the coach researcher, "This shows the commitment these teachers have to this process. They have added a planning day and they are willing to slow down the process in order to get it done correctly. They are flexible with their lessons and sequence."

Professional development assessment feedback.

Table 13 *Professional Development Evaluation Questions*

Question Number	Question
1.	Did you like using common planning time to create an aligned unit of study?
2.	Were our meetings and effective use of planning time?
3.	Did the UbD template/framework make sense to you by the end of the planning process?
4.	Will the UbD framework be useful to you in the future?
5.	Was the leader knowledgeable and helpful?

The professional development evaluation responses gave insight into the participants' experience during the professional development intervention (Gusky, 2000). Based on the five questions in Table 13, the overall professional development experience was effective in Iteration 1 and 2. Question 1 revealed all teachers liked using common planning time to create a unit of study. Teacher 2 elaborated on the response and indicated, "Our common planning time was all about collaboration…we had an agenda and were productive during our time." Teacher 3 also elaborated and stated:

> "Using the common planning time was invaluable and extremely productive. I would not have been able to accomplish all this planning and work on my own. Being able to share and bounce ideas off other teachers makes planning effective. Elizabeth was a great resource because she is genuinely interested in aligning lessons but also she was able to raise potential questions that students might ask because the content or lesson was new to her."

Teacher 4 indicated, “YES! This is the kind of work that is needed in our department.”

Question 2 revealed all teachers felt the intervention meetings were an effective use of planning time. Teacher 1 stated:

> “Absolutely. Our science curriculum had changed especially in the role of the students & teacher. Teachers had to learn to step back and provide students an opportunity to show their curiosity and develop their own questions.”

Teacher 2 added, “We were such a cohesive group. We worked so well together that I never felt like that time was wasted or we were meeting just to meet.”

Questions 3 revealed all teachers understood the UbD template by the end of the planning process. Teachers expressed the template was helpful in keeping the planning process organized, helped them understand the big ideas of the unit, and allowed them to refer to the template throughout the intervention process as they implemented the lesson and unit plan in the classroom. Teacher 4 indicated, “100% - it made planning much less complex and helped to create a better sequence of lessons, ensuring skills needed for the final assessment were addressed prior to giving the assessment.”

Question 4 revealed the three teachers felt the UbD framework would be useful in the future. The teachers indicated backwards planning allowed them to remove the lessons that did not align to the big ideas and were able to focus in on aligned student outcomes. Teacher 2 stated, “Yes. I plan on using it whenever I have to plan a unit and need a solid, organized way of putting my lessons in order.” Teacher 4 stated, “Definitely. I even keep asking myself now - What is the end product? What do I want students to know and be able to do at the end? - before designing lessons or materials.”

Question 5 revealed all teachers felt the leader was knowledgeable and helpful during the professional development process. All teachers elaborated on this question and indicated the leader was supportive throughout the process. Teacher 2 stated, "I was impressed with the leader's ability to manage our time and present material to our group so we could use it within our daily lessons." Teacher 3 stated:

> "The leader was and is an amazing leader. She is incredibly resourceful, curious and intelligent. She was able to find so many resources we had not previously found. Her knowledge of technology and how to use it to the full extent, as well as her ability to problem solve was incredibly helpful."

Teacher 4 stated, "The best. Helpful, flexible, patient. Really took time to put herself in our shoes and think about where the students are coming from for each decision we made."

The results of the professional development evaluation aligned and supported the findings from the teacher-participant weekly reflections, meeting transcriptions, and focus interview results.

Iteration 1 and 2 Quantitative Data Strands

Marzano Planning Evidence Checklist. The analysis of the Marzano behavior checklist indicated science and language art teachers implemented all twelve components of effective lesson and unit plans aligned to grade level standards using learning targets in a performance scale during the professional development intervention planning meetings.

Marzano Unit Planning Rubric. Iteration 1 and 2 results from the unit-planning rubric indicated the professional development intervention positively influenced teachers' ability to create and align scaffolded lessons with a unit of study. The final unit plans of study received a score of nine (0-9 scale). A score of nine indicated the unit plans included organized content

where new information built on the previous information; lessons organized within a unit so students moved from understanding to applying the content through authentic tasks; and teachers' ensured lessons and the unit plan of study included the important content identified by the district with an appropriate sequence. The completed unit plans of study and scaffolded lessons created during the intervention process supported the Marzano planning checklist and rubric scores.

Understanding by Design Unit Planning Checklist. The Understanding by Design Checklist included the 23 components an aligned unit plan of study should have included. The science and language arts unit of study completed during the intervention included all 23 components from the checklist. The analysis of the checklist supported the analysis of the Marzano Unit Planning Rubric as evidenced by the completed science and language arts unit plan of study and accompanying scaffolded lesson plans. The results of the quantitative strands supported the findings of the qualitative data strands in Iteration 1 and 2.

Summary

Participants in Iteration 1 and 2 initially struggled to create scaffolded lesson plans aligned to unit plan of study as evidenced in the needs assessment. Common planning time was ineffective at the building, department, and district level regarding specific instructional planning strategies. Findings also indicated there existed a discrepancy between building administration and content teacher perceptions regarding instructional planning needs.

Through the professional development, teacher-participants in Iteration 1 and 2 and the coach-researcher successfully created an aligned unit of study with accompanying scaffolded daily lessons that employed the UbD framework as measured by the Marzano Unit Planning

Rubric. In addition, the results indicated the UbD framework assisted participates in Iteration 1 and Iteration 2 to transform their capacity to design a unit plan of study to curriculum standards.

CHAPTER V: CONCLUSIONS

This action research study was conducted to understand the teacher instructional planning process as it related to designing and modifying an aligned unit of study and lesson plans during instructional common planning time meetings. It also focused on determining if implementing the Understanding by Design framework structured, focused and improved teacher instructional planning meetings through a professional development intervention. Transformative learning theory guided the theoretical framework to assist participants in changing their thinking and instructional planning practices. The study was exploratory during the needs assessment collecting teacher-participants' perceptions of instructional common planning time and their behaviors during collaborative planning time. The needs assessment revealed science and language arts content teachers lacked adequate planning time and resources, instructional planning support and guidance at the building, department, and district level. Instructional planning professional development prior to the intervention did not assist teachers in designing and modifying current unit plans of study to district curriculum standards and there were discrepancies between teacher and administrator perceptions regarding instructional common planning time at the building level. The instructional planning professional development intervention, which employed the Understanding by Design framework in Iteration 1 and 2, did assist teacher-participants and the coach-researcher to effectively design and modify an aligned unit plan of study and accompanying scaffolded lesson plans during the instructional planning professional development meetings.

The findings from this study offer conclusions for teachers, curriculum leaders, content specialists, administrators, and district leaders when trying to improve teacher instructional unit planning practices and instructional professional development.

This action research study demonstrated that teacher instructional common planning time could be improved using the Understanding by Design framework and the Cooper (2009) Effective Professional Development Research-Based Model based on the research done by Joyce and Showers (2002), along with an instructional support coach. The Understanding by Design framework, the professional development intervention, and the instructional support of the researcher-coach lead teachers to transform their instructional planning process pedagogy through the constructs of transformative learning theory (Mezirow, 1990).

Discussion of the Results

The overall findings in the needs assessment uncovered that, although the purpose of common planning time was to design and modify lesson and unit plans and align them to curriculum standards based on the teacher and administrator survey and semi-structured interviews, that was not what was taking place during this time. The researcher felt it important to understand teacher perspectives regarding instructional planning time in order to gain an overall understanding of curriculum alignment and the lesson design process in a local setting. Gaining an understanding of teacher instructional planning challenges informed the intervention and modifications in Iteration 1 and 2. Research indicates it is important to investigate how teachers use collaborative planning time when designing units of study if we are to improve current methods (Huizinga, Handelzalts, Nieveen, & Voogt, 2015). The literature indicates there needs to be more studies that focus on what teachers are actually doing during common planning time meetings (Mertens, et al., 2010), which was the purpose of the needs assessment in this study. In addition, effective common planning time is essential if schools want to increase student and teacher learning. Common planning time is the most important thing a principal can

do to ensure the success of teaming, but just having common planning time is not enough (Williamson & Blackburn, 2006).

The needs assessment uncovered common planning time prior to the intervention was ineffective due to time constraints, lack of resources, instructional support, structure and purpose. The open-ended interviews and teacher survey indicated teachers needed more structured, uninterrupted planning time, instructional support and resources to effectively design and modify instructional plans aligned to curriculum standards. The results indicated teacher common planning time was ineffective as teachers spent most of the time searching for lesson resources and discussing what they wanted to teach rather than actually drafting lesson plans and finding appropriate resources. Teachers spent much of their time searching the internet for resources, searching their computer files for existing plans, and verbally discussing lessons. Teachers struggled with determining a starting point to their units of study and determining a final performance task. This finding confirms previous research, which stated teachers do not typically write out their planning instruction nor do they base lessons on solid plans (Reynolds, 1992). The research also indicated teachers spent more time thinking about planning rather than writing formal instructional plans (Ball, Knobloch, & Hoop, 2007). Teachers spent time discussing lessons they wanted to do but did not spend time writing lesson objectives, students skills, or assessments out formally in a central location. Employing the UbD framework and incorporating an instructional support coach focused and structured teacher-participants' instructional planning on writing out specific lesson objectives, student skills, and assessments into the UbD template. The template allowed teacher-participants to store all resources in one location and it also gave focus and purpose to instructional planning time. Implementing an instructional planning framework and ensuring participants had consistent instructional coaching

support, instructional resources, and a process for continuously modifying instruction through collaborative discourse assisted teacher-participants and the coach-researcher to develop an aligned unit of study as well as transform teacher instructional planning beliefs and processes. These findings should be considered by districts and buildings when the goal is improving professional development instructional planning and to empower teachers to transform their instructional planning strategies and beliefs.

Teachers at the building, department, and district level only had time to revise existing teacher-created lessons and units, which were not aligned to the district curriculum standards nor did they focus on big ideas of a unit. Teachers did not have time to create or modify new lessons and ensure alignment with curriculum standards.

The findings of the needs assessment uncovered planning time was ineffective because of constant interruptions during planning meetings that took the planning process off-task and often ended the planning time. Teachers spent planning time grading student work or had to attend other meetings or duties. All teachers revealed one day per week for common planning time was not enough time to adequately design and modify high-level aligned lessons and unit plans of study. This finding was supported by research done by Mertens (2010), which indicated common planning time should take place at least four times per week for a minimum of 30 minutes in order for it to be effective.

In language arts, a large portion of planning time revolved around discussing how to increase student performance on standardized assessments and on individual student tasks rather than planning and aligning standards to student objectives. Language arts teachers had a difficult time understanding the purpose of their existing units so they were unable to determine appropriate performance task assessments and resources for lessons. In science, teachers spent

time trying to find new resources because of the new NGSS standards they had to teach without a structured district curriculum. These findings add to the research because the gap in research indicated a need to understand what teachers actually do during common planning time (Mertens, et al., 2010). In addition, teachers spent too much planning time looking for resources during meetings and they did not have adequate resources or instructional planning support. This confirms the finding in the literature that states teachers want specific, concrete and practical ideas that directly connect to the day-to-day process of their classrooms (Gusky, 1986). Cooper (2000) also indicated professional development is effective when it directly relates to what teachers are doing every day and when it focuses on materials teachers use for instruction. The results of the needs assessment indicated teachers needed instructional support with gathering lesson resources, a central location to store lesson plans and resources, uninterrupted and structured instructional planning time, and instructional coaching support that guided the instructional planning modification process during collaborative planning time. This lead the coach-researcher to employ the UbD template as a means for storing all lesson plans and resources in one location, to structure and focus collaborative instructional planning meetings based on the UbD template and to allow for constant modification to the template. The coach-researcher ensured all lesson plan modifications were made during planning meetings with all teacher-participants in attendance. This ensured all participants were aware and a part of the instructional decision-making process.

The implementation of the UbD framework and instructional support from the coach-researcher in Iteration 1 and 2 gave structure and purpose to the professional development planning meetings, provided sustained support and guidance, and reduced time constraints due to interruptions and lack of resources. Teachers in both iterations expressed the UbD framework

allowed them to visualize the starting points of the unit, helped them identify specific student skills, final performance tasks and unit big ideas in order to align lesson activities to curriculum standards and student objectives. Employing the UbD framework along with the continuous instruction support from the coach-researcher was a critical transformation in the planning process. Backward design research focuses on developing and deepening understanding of important big ideas or concepts, which supports the use of UbD in this study (Mills, Wiley, & Williams, 2019). The coach-researcher ensured the UbD template guided each planning meeting and all members reviewed, discussed and modified the previous week's work before continuing the planning process. Participants input and feedback regarding instructional planning decisions demonstrated the coach-researcher that when teachers reflected on resource activities and assessments from the student perspective, they could design and modify meaningful instruction. The findings from the data revealed planning from the student perspective promoted teacher transformation in instructional planning.

The UbD framework along with the instructional support from the coach-researcher further supported the importance of a collaborative relationship of all group members prior to the intervention in each iteration. This promoted a safe environment where all members openly and honestly expressed the positive impact of the intervention as well as the challenges. The coach-researcher found beginning every meeting with an open discussion about the intervention process and questions group members had, benefited the planning work. Constant dialogue, reflection and modifications became a part of every meeting. The coach-researcher supported all teacher-participants during planning meetings based on the needs of each group and ensured they had a clear idea of the purpose of all meetings using the UbD template as the guide. The findings suggest that an instructional coach or support staff should structure and focus instructional

planning meetings for teachers using a specific instructional planning framework and template such as the UbD framework. These findings also suggest the specific instructional needs of each group should be considered before modifications are made in order to improve teacher instructional planning. The coach-leader must understand the specific struggles and strengths of each group before implementing an intervention. For example, language arts teachers needed more support with narrowing down the broad Common Core Standards before beginning the alignment process. These teachers struggled with choosing a performance task prior to the intervention so they needed more guidance and time with choosing the performance task. In science, teachers needed more guidance with choosing new lesson resources that aligned with the new NGSS standards. The coach-researcher had to understand the challenges each group faced before the implementation of each intervention and be patient and flexible with all teacher-participants. The literature supports this finding, which indicates in order for collaborative teams to be successful, support is needed and coaches must adapt to the needs of the team (Binkhorst, Handelzalts, & Van Joolingen, 2015). In addition, the research indicated collaborative teams need support in developing a clear picture regarding instructional planning and curriculum alignment expectations. Collaborative teams with leadership support assist teachers to enhance their knowledge regarding pedagogical content and develop practical skills (Vooght, Pieters & Handelzalts, 2016). Iteration 1 and 2 indicated content teachers needed continuous instructional support that offered practical strategies and resources that directly affected classroom instruction. The needs assessment revealed teachers did not receive sustained instructional support and guidance that directly affected classroom instruction. These findings support the literature, which states leaders are an essential part of the collaborative meeting setting and teachers need consistent guidance and leadership in order improve teacher learning (Burton, 2015). The

findings suggest the leader or instructional coach should be a part of the instructional planning process during common planning time and promote a safe environment where group members are able to have open discussions about daily planning challenges and successes. Professional development planning meetings should have a clear purpose that connects to classroom instruction.

In an era of high stakes testing and standards-based education reform, the need for high quality professional development is important (U.S. Department of Education, 2001). The needs assessment revealed professional development at the building, department, and district level was not effective in assisting teachers to improve their instructional planning practices. The findings indicate improving professional development instructional planning meetings should begin with every meeting having a clear focus that aligns with teacher expectations and classroom instruction. Department and district meetings should give teacher the opportunity to meet with content-specific and grade level colleagues. Instructional resources and strategies should focus on specific classroom instructional practices and activities. These findings support the existing professional development literature, which indicates current professional development programs need improvement in order for meaningful changes to occur (Trehearn, 2010). Teachers participate in staff development because they believe the activities will help them become better teachers (Berman & McLaughlin, 1978). When teachers see their instructional planning decisions impact student expectations, they are motivated to improve their instructional planning practices. Research confirmed that teachers changed their beliefs once they saw the student success in the classroom (Gusky, 2002). Teachers want specific, concrete and practical ideas that connect directly to the day-to-day process of their classroom (Gusky, 1986). Research also indicates in order for teachers to retain and apply new instructional strategies, skills, and

concepts, they must receive coaching as they try to apply the new learning (Cooper, 2009). Improving professional development instructional planning at the building level through coaching was a purpose of the intervention implemented in Iteration 1 and 2.

Professional development should focus on changing teachers' attitudes, beliefs, and perceptions (Gusky, 1986). In order to achieve effective professional development, the coach-researcher employed the Cooper (2009) Professional Development Model, which aligned with the UbD framework process, in order to assist teachers to design and align units of study and promote professional learning. According to Cooper (2009), Professional development must focus directly on the curriculum teachers are teaching every day.

All teacher-participants in Iteration 1 and 2 indicated the professional development they received helped them to design an aligned unit of study and accompanying lesson plans because of the structure and organization of the UbD framework and the instructional support they received from the coach-researcher during all meetings. The findings from this research study indicate instructional professional development should focus on specific classroom instructional strategies and resources guided by a unit planning instructional template. Instructional coaches should model and lead the instructional planning meetings using a specific agenda that outlined meeting objectives and next steps. Meeting objectives and next steps should be reviewed at the start and at the end of each instructional planning meeting in order to guide open discussion, feedback and modifications.

In this research study, the coach-researcher and the teacher-participants reviewed and came to a mutual understanding of the theory behind effective instructional professional development and the process and purpose of the UbD framework. The coach-researcher continuously modeled the UbD planning process in every meeting and always connected the

planning process back to the big ideas and the purpose of every scaffolded lesson and unit plan of study. Specific planning meeting objectives and next steps guided each instructional planning meeting to ensure focus and purpose of each meeting. The coach-researcher and the teacher-participants practiced the planning process by reviewing a sample unit plan as they developed starting points and assessments. The coach-researcher incorporated positive feedback throughout the instructional planning process with participants by incorporating open dialogue and reflection at the start of every planning meeting and the coach-researcher and teacher-participants gave each other positive feedback throughout the intervention. The coach-researcher presented all instructional resources from the student perspective, which allowed teachers to transform their instructional practices from teacher-centered to student-centered.

Transformative Learning Theory

The theoretical framework of this action research study was transformative learning theory (Mezirow, 1991). Transformative learning theory guided the coaching, professional development intervention, and the UbD framework implementation for the teacher-participants. According to transformative learning theory, in order for transformation to occur, the values, beliefs and assumptions about how a person views the world must be uncovered in order to construct meaning. People make meaning of the world through experiences, develop a frame of reference for understanding the world, and in the process of daily living, absorb values, assumptions, and beliefs about how things are without much thought (Cranton & King2003). This aligned with the purpose of the needs assessment in that the coach-researcher needed to uncover teacher-participant perceptions and beliefs about instructional planning before implementing the intervention in each iteration. The open-ended interviews, meeting minutes, and teacher survey allowed the coach-researcher to understand teacher-participant beliefs

regarding instructional common planning time behaviors and their instructional planning practices. It was through this lens, the coach-researcher, through developing an understanding of teacher-participant prior experiences, critical reflection, and rational discourse, was able to uncover the assumptions and beliefs of teacher-participants.

Findings from this study allowed the coach-researcher to lead the participants to examine their practice critically in order to form new ways of understanding instructional planning and encourage transformation. This was supported by Mezirow (1991), who found that people view the world and their experiences to understand how they make sense of the world based on previous experiences.

According to Mezirow (1991), transformation occurs when a person encounters a disorienting dilemma or a triggering event that stimulates a person to go through critical self-reflection and self-examination where personal assumptions, beliefs, and habits of mind are examined (Santalucia & Johnson, 2010). During this research study, participants identified and reflected on their instructional planning challenges prior, during, and after the intervention. Through the reflection process and continuous dialogue and feedback in each planning meeting, teacher-participants identified the aspects of planning that made them uncomfortable and caused roadblocks to their instructional planning process as well as the successes they experienced during the professional development intervention that employed the UbD framework. These lead teachers to transform their instructional practices because they were able to identify specific areas they struggled with and identify the specific strategies that assisted them in overcoming their instructional challenges. Teachers began to question their instructional decisions because planning shifted from the teacher to student perspective because of the continuous modification process to the UbD template and scaffolded lessons.

A purpose of this study was to transform teacher-participant planning practices and beliefs through the professional development intervention and the Understanding by Design framework. The findings in the action research study indicated teacher-participants in both iterations transformed their instructional planning practices and beliefs when compared to the needs assessment. Teachers were initially unclear about the UbD process, struggled with determining final performance tasks, lesson starting points, and how to design instruction from the student perspective. Through coaching, dialogue, reflection, and continuous modifications, the teacher-participants transformed their thinking. The findings from this study indicate it is important for instructional coaches to present lesson activities and resources to teachers from the student perspective in order to shift teacher instructional practices from teacher-centered to student-centered. Instructional leaders should ensure teachers have an opportunity to discuss their instructional challenges through authentic discourse. Once teacher-participants discovered and understood the importance of identifying a performance task before designing individual lessons, they indicated their instructional planning process and beliefs had changed and transformed. Identifying the performance task lead teacher-participants' to design an aligned unit of study from the student perspective that was effective in the classroom.

Finally, teacher-participants indicated transformation occurred because the coach-researcher facilitated the instructional planning meetings effectively and efficiently and created a safe, open collaborative environment that promoted authentic discourse, reflection and an atmosphere where all participants were learners. The UbD template helped to focus and structure each planning meeting, promoted the continuous process of modifications, gave teacher-participants a visual of the unit planning process as a whole, and assisted teacher-participants in understanding the importance and significance of beginning the instructional

planning process with the end in mind. According to Cranton (2006), educators cannot ensure that transformation will take place because teachers have to embark on the journey on their own. Although change cannot be forced, if the coach-researcher acts as an instructional role model by presenting information from the student perspective and ensures every planning meeting is effective and efficient, validates teachers' challenges, allows teachers to make instructional planning decisions and modifications and shows a willingness to learn and build trust with the members, transformation can occur.

Conclusions

Four conclusions were drawn from the needs assessment and Iteration 1 and 2. First, it was important to uncover and understand teacher perspectives and behaviors regarding lesson and unit planning instructional design during common planning time meetings to develop and implement the intervention. Understanding the process teachers went through as they tried to plan instruction collaboratively uncovered the challenges teachers faced. Employing the UbD framework as a structure for guiding planning meetings helped improve teacher instructional planning, and allowed the coach-researcher to validate teacher challenges. Once the intervention was introduced, the qualitative and quantitative data strands assisted the coach-researcher to ensure teacher perceptions were accurate when compared to the secondary source artifacts, observation checklists, and meeting minutes.

The Understanding by Design (Wiggins & McTighe, 2005) framework assisted the teacher-participants and coach-researcher to design an aligned unit of study with accompanying daily lesson plans during the professional development intervention in both iterations as evidenced by the science and language arts successfully completed UbD unit plan rated by the Marzano Unit Planning Rubric, and the UbD Unit Planning Checklist. The framework gave teacher-

participants a comprehensive method that focused on the entire unit plan, which allowed them to understand the process of unpacking standards, determine a performance task, and establish big ideas and essential questions that align with a sequence of lesson plans (Banner, 2016). The findings indicated the UbD framework structured and focused teacher common planning time meetings at the building level. The continued training from and collaboration with the coach-researcher during the weekly meetings was essential to the development of a cohesive unit of study in both iterations.

Findings from this action research study revealed that providing teacher-participants with sustained coaching support and guidance throughout the professional development intervention was critical to the unit planning process. Teacher-participants revealed they needed on-going support with narrowing standards, identifying big ideas, determining a performance task, developing daily lessons, and identifying lesson resources. Teacher-participants indicated the coaching they received during the intervention was essential to the development of a cohesive unit plan of study and in ensuring that common planning time was focused and structured. Continuous dialogue between the coach-researcher and teacher-participants provided an opportunity to discuss planning concerns, obstacles, and resolutions during every planning meeting.

Findings from the teacher-participant weekly reflections, focus group interviews, researcher reflections, meeting minutes, the professional development feedback form, and the UbD completed unit plan of study revealed that instructional planning from the student perspective influenced transformation in teacher instructional practices and thinking. Presenting lesson activities from the student perspective shifted teacher instructional planning from teacher-centered to student-centered and increased student expectations. All teacher-participants

indicated viewing content from the student perspective and shifting their mindset to thinking like a student was one of the most important aspects of the intervention that transformed their thinking.

Implications

The results of this action research study supports the existing research regarding the efficacy of the Understanding by Design framework and effective instructional professional development. There were four major implications from this action research study:

Understanding teacher and administrator perspectives is important.

The findings from the needs assessment uncovered that teacher did not have adequate instructional resources to plan units of study aligned to curriculum standards, nor did they have sustained instructional support or adequate planning time. Yet, administrators believed that teachers had adequate resources, support, and planning time. Understanding these discrepancies helped inform the research study and improved teacher instructional planning time. It is essential leaders in a district have a clear understanding of teacher challenges before trying to improve instructional planning professional development and unit planning curriculum alignment.

Professional learning and instructional planning.

This study demonstrates that district leaders, administrators and curriculum leaders, should consider incorporating the Understanding by Design framework as a structure to organize and improve instructional planning professional development at the building, department, and district level. Teachers should be included in the curricular decision-making process. Administrators should also ensure common planning time is uninterrupted in order to promote effective planning meetings. Building, department and district professional development

meetings should align with content teacher expectations that directly improve classroom instruction as much as possible. Professional development meetings should also be conducted in small groups and with specific grade-level content teachers to ensure the implementation of clear and specific meeting objectives and authentic collaboration and discourse. Professional development meetings must be organized and teacher-lead. Teachers should receive coach instructional training in order to empower them to transform their instructional planning practices. Teachers need the opportunity to make final instructional planning decisions that connect directly to classroom instruction in order to transform teacher thinking and planning practices.

Coaching instructional planning support.

District leaders and building administrators should consider incorporating teacher-coaches as a part of professional learning communities in order to sustain effective instructional planning professional development. Content teachers should receive coaching training in order to support teacher instructional common planning time. Coaches can support teachers in gathering specific instructional planning resources and assist teachers to design aligned unit plans of study at the building level. Districts should consider developing shared platforms where teachers, coaches, curriculum leaders, and content specialists can access instructional resources in one central location for each content area and grade level. All stakeholders must understand the importance of coaching in the process of effective instructional planning during structured professional development. The coach-researcher in this study worked alongside teachers on a weekly basis, gathered and reviewed instructional resources with teacher-participants, and continuously reviewed and reflected on the next steps from each planning meeting to ensure appropriate modifications and clarifications were made to the unit planning template. It is imperative to understand that although the UbD template was a framework that assisted the

coach-researcher and teacher-participants to keep the instructional planning meetings organized and focused, ensured lesson plans aligned to the unit objectives, and allowed participants to store all unit resources in once central location; this work would not have been successful without the time commitment the coach-researcher gave to the instructional planning process (see Figure 2).

Outsider perspective and instructional planning.

This study revealed that an instructional support leader or coach does not have to be a content expert in order to assist teachers with lesson and unit design. Having a coach-researcher who was not a content expert shifted the planning process from teacher-centered to student-centered and transformed teacher thinking. Teachers indicated having an "outsider" question their instructional planning decisions made them think about the purpose of their lesson activities and assessments with student objectives in mind. Having a new perspective promoted a fresh way of thinking about and designing lesson and unit plans of study.

Researcher Praxis

This study gave the researcher the opportunity to uncover the instructional planning challenges teachers faced in a local setting. This allowed the researcher to implement a professional development intervention based on the identified instructional planning challenges teachers faced with planning an aligned unit of study and accompanying lesson plans. In addition, the research study influenced the praxis of the researcher as a coach and as an instructional support technology teacher.

The researcher learned it was extremely important to engage in constant reflection throughout the study because of her insider role during the interventions in order to be aware of her position, influence, and existing bias concerning the research findings. This was important as the coach-researcher worked alongside the teacher-participants in both iterations constructing

the unit plan of study collaboratively. The coach-researcher frequently reflected on teacher-participant actions and engaged in constant reflection throughout the planning meetings. It was critical the coach-researcher separated teacher-participant planning actions from coach-researcher planning actions in order to understand the instructional planning process teacher-participants engaged in and how their processes changed throughout the intervention.

The researcher learned the action research process took commitment from all participants because it was a time consuming process. In addition, the coach-researcher learned the importance of establishing positive, trusting, and professional relationships with participants and that the power relations among participants was equal because each person contributed to and took ownership of the planning process (Airasian & Gay, 2012). In order for the cyclical process of designing, revising, and modifying instructional plans during the intervention to occur, all participants had to listen to each other, offer positive feedback, and support group decisions. It was important for the coach-researcher to facilitate and model the effective instructional planning behaviors and to understand and consider the varying instructional needs of each group in both iterations.

The researcher learned the importance of gathering qualitative and quantitative data strands in each iteration and to check the accuracy of the findings (Creswell, 2014). During the needs assessment, the coach-researcher gathered information about what teacher's thought about their current common planning time meetings and it was important to corroborate their perspectives with quantitative data such as the observation checklists conducted during common planning time meetings. The triangulation of the different data strands strengthened the validity of the study and further informed the intervention in Iteration 1 and 2. The coach-researcher also

learned the importance of member check to ensure accuracy of the qualitative findings in each iteration, which further strengthened the validity of the results (Creswell, 2014).

The researcher learned the importance of organizing and structuring each data strand. Due to the large amount of data, the researcher created a computer file system organized by the needs assessment, Iteration 1 and 2. Each data strand was arranged in a triangulation matrix (Mills, 2013) by each research question it answered. This organizational process assisted the researcher in effectively coding the data to draw accurate results and conclusions.

Limitations of the Study

A limitation of this study was the small sample of five teacher-participants in one suburban middle school and the results were specific to one site, but the findings of this research study can inform the instructional planning professional development process and impact of employing the Understanding by Design framework.

Another limitation was the researcher was the main instrument in the data collection process. In addition, preexisting factors may have been present prior to the study regarding variations in teacher prior knowledge and skills with backwards lesson and unit design and curriculum alignment. The existing relationship between the coach-researcher and the teacher-participants may have also have been a limitation.

Another limitation was that the teacher-participants in Iteration 1 and 2 were motivated to participate in the action research study because they struggled with curriculum alignment. The science teacher-participants in Iteration1 had to teach the new NGSS standards without a district curriculum in place and wanted support in the unit planning process. The language arts teacher-participants in Iteration 2 struggled with narrowing down the broad and thematic Common Core Standards and wanted to support in the unit planning process.

Recommendations for Future Research

School districts should evaluate current instructional planning professional development practices at the building, department, and district level in order to understand the current challenges teachers face regarding instructional planning and curriculum alignment and determine any discrepancies between teacher and administrative perceptions. This information can assist building administrators on how to facilitate improvement in communication and collaboration practices at the building level. The local site can use the results of the study to determine potential next steps in assisting teachers to enhance their instructional unit planning praxis during common planning time.

District leaders, building administrators, curriculum leaders, and building content specialists can use the results of this study to inform improving professional development using the Understanding by Design framework as a systematic approach to assist teachers to design and modify units of study with accompanying lesson plans as well as empower them to transform their instructional planning beliefs and practices.

Further research that employs the UbD framework as a structure for focusing and organizing instructional planning professional development in different content areas and grade levels would strengthen the results of this study. Research should also include the impact instructional planning using the UbD framework has on student learning outcomes. Future research should also include teacher-participants creating their own unit plan of study using the UbD framework to determine if they can complete the task without coaching instructional support.

Finally, the findings of this study can add to the current body of research regarding instructional planning professional development using the Understanding by Design framework

and curriculum alignment as a professional development tool. This study also further informs the gaps in the research regarding the specific tasks teachers undertake during common planning time.

Summary

There were four conclusions drawn from this action researcher study. The needs assessments indicated teacher instructional common planning time at the building level was ineffective and teachers were unable to design an aligned unit plan of study to curriculum standards prior to the intervention. Conclusions drawn from Iteration 1 and 2 indicated the professional development intervention that employed the Understanding by Design framework did assist teacher-participants to design an aligned unit plan of study with accompanying lesson plans. In addition, providing teacher-participants with sustained coaching support and guidance throughout the professional development intervention assisted teacher-participants in narrowing standards, identifying big ideas, determining a performance task, developing daily lessons, and identifying lesson resources throughout the intervention. Finally, instructional planning from the student perspective influenced transformation in teacher instructional practices and thinking. All teacher-participants indicated viewing content from the student perspective and shifting their mindset to thinking like a student was one of the most important aspects of the intervention that transformed their instructional planning beliefs.

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Appendix A

Marzano Unit Planning Rubric

1.Domain 2: Planning and Preparing

Applying (3)	Developing (2)	Beginning (1)	Not Using (0)
Within lessons, teacher organizes content in such a way that each new piece of information clearly builds on the previous piece.	Teacher scaffolds the information but the relationship between elements is not made clear.	Teacher attempts to perform this activity but do not actually complete or follow through with these attempts.	Teacher does not attempt to perform this activity.

2. What teachers do to plan and prepare lessons within a unit that progress toward a deep understanding and transfer of content?

Applying (3)	Developing (2)	Beginning (1)	Not Using (0)
Teacher organizes lessons within a unit so that students move from understanding to applying the content through authentic tasks.	Teacher organizes lessons within a unit so that students move from surface to deeper understanding of content but do not require students to apply the content in authentic ways.	Teacher attempts to perform this activity but do not actually complete or follow through with these attempts.	Teacher does not attempt to perform this activity.

3. What teachers do to plan and prepare for appropriate attention to establish content standards?

Applying (3)	Developing (2)	Beginning (1)	Not Using (0)
Teacher ensures that lessons and units include the important content identified by the district and the manner in which that content should be sequenced.	Teacher ensures that lessons and units include the important content identified by the district but do not address the proper sequencing of content.	Teacher attempts to perform this activity but do not actually complete or follow through with these attempts.	Teacher does not attempt to perform this activity.

Note. Adapted from Marzano, R. J. (2011). *The Marzano teacher evaluation model*. Retrieved from http://pages.solution-tree.com/rs/solutiontree/images/MarzanoTeacherEvaluationModel.pdf

Appendix B

UbD Unit Planning Template

Title of Unit		**Grade Level**	
Curriculum Area		**Time Frame**	
Developed By			
Identify Desired Results (Stage 1)			
Content Standards			
Understandings		**Essential Questions**	
Overarching Understanding		**Overarching**	**Topical**
Related Misconceptions			
Knowledge Students will know…		**Skills** Students will be able to…	
Assessment Evidence (Stage 2)			
Performance Task Description			
Goal			
Role			
Audience			
Situation			
Product/Performance			
Standards			
Other Evidence			
Learning Plan (Stage 3)			

Where are your students headed? Where have they been? How will you make sure the students know where they are going?	
How will you hook students at the beginning of the unit?	
What events will help students experience and explore the big idea and questions in the unit? How will you equip them with needed skills and knowledge?	
How will you cause students to reflect and rethink? How will you guide them in rehearsing, revising, and refining their work?	
How will you help students to exhibit and self-evaluate their growing skills, knowledge, and understanding throughout the unit?	
How will you tailor and otherwise personalize the learning plan to optimize the engagement and effectiveness of ALL students, without compromising the goals of the unit?	
How will you organize and sequence the learning activities to optimize the engagement and achievement of ALL students?	

<table>
<tr><th colspan="3">Stage 1 – Desired Results</th></tr>
<tr><td rowspan="6">ESTABLISHED GOALS

The enduring understandings and learning goals of the lesson, unit, or course.</td><td colspan="2">Transfer</td></tr>
<tr><td colspan="2">Students will be able to independently use their learning to…

Refers to how students will transfer the knowledge gained from the lesson, unit, or course and apply it outside of the context of the course.</td></tr>
<tr><td colspan="2">Meaning</td></tr>
<tr><td>UNDERSTANDINGS
Students will understand that…

Refers to the big ideas and specific understandings students will have when the complete the lesson, unit, or course.</td><td>ESSENTIAL QUESTIONS

Refers to the provocative questions that foster inquiry, understanding, and transfer of learning. These questions typically frame the lesson, unit, or course and are often revisited. If students attain the established goals, they should be able to answer the essential question(s).</td></tr>
<tr><td colspan="2">Acquisition</td></tr>
<tr><td>Students will know…

Refers to the key knowledge students will acquire from the lesson, unit, or course.</td><td>Students will be skilled at…

Refers to the key skills students will acquire from the lesson, unit, or course.</td></tr>
<tr><td colspan="3">Stage 2 – Evidence and Assessment</td></tr>
</table>

Evaluative Criteria	Assessment Evidence
Refers to the various types of criteria that students will be evaluated on.	PERFORMANCE TASK(S): **Refers to the authentic performance task(s) that students will complete to demonstrate the desired understandings or demonstrate they have attained the goals. The performance task(s) are typically larger assessments that coalesce various concepts and understandings like large projects or papers.**
	OTHER EVIDENCE: **Refers to other types of evidence that will show if students have demonstrated achievement of the desired results. This includes quizzes, tests, homework, etc. This is also a good point to consider incorporating self-assessments and student reflections.**

Stage 3 – Learning Plan

Summary of Key Learning Events and Instruction

This stage encompasses the individual learning activities and instructional strategies that will be employed. This includes lectures, discussions, problem-solving sessions, etc.

From: Wiggins, Grant and J. Mc Tighe. (1998). *Understanding by Design*, Association for Supervision and Curriculum Development ISBN # 0-87120-313-8.

Appendix C

Participant Information Guideline and Consent

Title of research	
	Instructional Planning and Curriculum Alignment Professional Development Model at the Middle School Level: Action Research Study
Investigator	
	Parthena Proskinitopoulos
Rationale	
	This action research study seeks to identify and implement a professional development intervention that assists teachers, content specialists, and building administrators to effectively align units of study with district curriculum documents in science, math, and language arts at the middle school level. First, an exploratory needs assessment study will be conducted in order to collect qualitative data to determine how teachers design units of study with curriculum standards. Second, teachers will participate in professional development intervention workshop over a sustained amount of time to learn how to effectively design units of study that are aligned with curriculum standards using Understanding by Design framework (Wiggins & McTighe, 2005).
1.What you should know about this research study	
	a. Someone will explain this research study to you b. You volunteer to be in the research study c. Whether or not you take part is up to you d. You can choose not to take part in the research study e. You can agree to take part now and later change your mind f. Whatever you decide will not be held against you g. Feel free to ask all the questions you want before you decide
2. Who can I talk to?	
	If you have questions, concerns, or complaints, or think the research has hurt you, talk to the research investigator at (203) 395-5579 or pproskin@my.bridgeport.edu
3. Approval	
	This research has been reviewed and approved by an Institutional Review Board. You may talk to the IRB Administrator at (203) 576-4974 or irb@bridgeport.edu or any of the following if: a. Your questions, concerns, or complaints are not being answered by the researcher b. You cannot reach the researcher c. You want to talk to someone other than the researcher d. You have questions about your rights as a research subject e. You want to get information or provide input about this research
4. What is the purpose of this research?	
	The purpose of this action research study is twofold: First, to explore local conditions of how suburban middle school content teachers use planning time when planning units of study. Second, to confirm if providing professional development focusing on instructional planning strategies and supports can increase teachers' abilities to use starting points, activity outlines, and curriculum objectives when planning lesson plans and a unit of study.
5. How long in duration is the research?	
	The research will be conducted from April 2019 to October 2019. If additional iterations or interventions are required, this timeframe may be extended.

6. What data will be collected?

Data will be collected from the following:

a. Survey and analysis of the results
b. Open Ended and Semi-structured interviews with participants and analysis of codes and themes
c. Observations and behavior checklist of department, building and district planning meetings
d. Participant informal on-going reflective journal
e. Meetings to discuss obstacles, progress and questions
f. Understanding by Design Framework and Unit Planning Template
g. Marzano Unit Planning Rubric analysis and results (professional development)
h. Document Matrix for analysis of Secondary Sources (curriculum documents, teacher lesson plans, unit plans, meeting agenda)

7. How many people will be studied?

6 Participants

8. What happens if I say yes, I want to be in the research?

If you voluntarily agree to participate in this study, you will be asked to complete the following:

a. Survey will take approximately 5 – 10 minutes to complete.
b. Semi-structured interview that will take approximately 30-45 minutes to complete, and a follow-up focus interview to discuss the overall findings of the collective interviews. This includes responding to semi-structured questions that will allow you to elaborate as much as you like.
c. Participate in instructional planning observations during meetings and during intervention of professional development
d. Maintain a reflective journal
e. Participate in professional development meetings (which are part of your school obligation using backward design
f. During and following this process, your identity will not be disclosed. However, I will be recording the interview and the planning-time meetings so that I can transcribe the information in order to determine an insider and outsider perspective on instructional planning time, as well as determine next steps.
g. The findings from the study will be available to you upon the study's conclusion and you will have access to your transcripts, codes and themes, and quantitative data from the unit planning rubric.

9. What happens if I say no, I do not want to be in this research?

a. You may decide to not participate in the research and it will not be held against you.
b. Please not that your participation is strictly voluntary and you are free to withdraw at any time.

10. What happens if I say yes, but I change my mind later?

a. You may agree to take part in the research and even begin, but your participation is strictly voluntary throughout and so you are free to withdraw at any time.
b. If you begin the research and then decide to leave the research, there is no penalty.
c. If you decide to leave the research, contact the investigator so that the investigator at: 203 (395-5579) or pproskin@my.bridgeport.edu or simply do not participate.

11. Is there any way being in this study could be bad for me?

a. Your participation in this research will pose no risk
b. Your involvement will cost you only minimal time

c. No positive or negative implications can be derived that may have any bearing on your assignment status or status within the school; this researcher and researcher's role is completely detached from all formal and informal evaluations.

12. Will being in this study help me in any way?

a. We cannot promise any benefits to you or others from taking part in this research.
b. Possible benefits may include understanding the practice and purpose of instructional planning time, improving professional development practices, and understanding how to design unit plans using backward design.

13. What happens to the information collected?

a. Efforts will be made to limit your personal information, including research study, to people who have a need to review this information. We cannot promise complete secrecy.
b. Organizations that may inspect and copy your information include the IRB and other representatives of this organization.
c. All data from the interviews will be recorded on a digital voice recorder and stored electronically on a password-protected laptop. The researcher will transpose the data into a Microsoft Word 2016 document in order to transcribe the interviews verbatim before coding and analyzing them for themes and later merging them into broad categories.
d. Categories will be further analyzed, compared and eventually reduced to 3-5 central themes. This will provide the basis for a narrative that summarizes the findings.
e. The qualitative data will be subject to validity and reliability tests in that the interviews will follow a specific pre-determined protocol and steps taken within the interviews as well as the researcher's thoughts and perspectives will be carefully documented. Following transcription and analysis, the interviewees will be given both the transcription and themes resulting from the interviews to check for accuracy agreement (member checks).
f. The interview data will be compared to additional survey data findings to understand instructional planning practices at the building level.
g. The data will be stored on the researcher's laptop, which is password protected. The transcripts that will be printed will remain at the home of the researcher and stored in a private desk that remains locked at all times. Following the completion of the Ed.D program (approximately four years – 2019-2022), this data will be shredded.
h. Any lesson plans, and the content of weekly meeting discussions or forms or reflective journals will remain confidential between the participants and researcher. Each will sign confidentiality agreements.
i. All observations will be confidential.

14. Can I be removed from the research without my permission?

a. The person in charge of the research study or the sponsor can remove you from the research study without your approval.
b. Possible reasons for removal include: Failing to respond to the questions appropriately and accurately; failure to attend the meetings and maintain the required documentation (reflective journals); failure to invest in seeking to increase an understanding of and a capacity to improve instructional planning professional development

Appendix D

Administrator Instructional Planning Survey

1. How often does grade level common planning (PIRR) time occur?

Daily

Every other day

Once a week

Once a month

Other (please specify/clarify)

2. What is the purpose of common planning time (PIRR) in our building? Please select all that apply.

Teacher preparation

Coordinating instruction

Creating assessments

Acquiring instructional resources

Discussing students

Conducting conferences

IEP/504 meetings

Other (please specify)

3. As an administrator, are you provided with the agenda and/or minutes from common planning meetings?

Yes

No

4. Is common planning time (PIRR) used in an effective manner by content teachers?

Yes

No

5. In your opinion, do teachers have adequate instructional planning time during the work week to create unit plans?

Yes

No

6. In your opinion, do curriculum leaders support teachers with aligning unit plans to curriculum standards?

Yes

No

7. In your opinion, do content teachers align unit plans with curriculum standards in your building?

Yes

No

8. Do content teachers have the necessary resources available to plan units of study in your building?

Yes

No

9. Do you think content teachers would benefit from Professional Development that focuses on unit planning and curriculum alignment?

Yes

No

10. Is collaborating with content teachers an important component to planning units of study in your building?

Yes

No

Appendix E

Teacher Instructional Planning Survey

1. Teachers have adequate planning time during their contractual time.

2. Teachers have adequate support from building content specialists in planning units of study

3. Teachers are supported by the building administrators with curriculum alignment and unit planning.

4. Instructional planning PD supports teachers in planning units of study.

5. Teachers would benefit from professional development that focuses on aligning curriculum standards to unit plans.

6. Teachers design lessons that are aligned with curriculum standards.

7. Teachers have adequate resources available to them to plan units of study.

8. Collaboration among teachers is an important component to planning units of study .

9. Curriculum leaders support teachers in aligning lesson plans with curriculum standards.

10. Please select your content area.

Appendix F

Team Planning Meeting: Direct Observation Form

Date: Time: Participants:	Observations	Observers Comments (OC)

(Mertler, 2014)

Appendix G

Building Behavioral Checklist

Building expectations for all meetings	Observed	Not Observed	Researchers Notes
1. Are participants referring to a meeting agenda to guide meeting?			
2. Are participants using Unit Planning Form?			
3. Are all participants contributing to planning meeting?			
3. Are participants planning common lessons?			
4. Are participants using the district curriculum document to plan?			
5. Are participants using a textbook to plan?			
6. Is the content specialist leading the planning meeting?			
7. Are all participants positive?			
8. Are all participants on time?			
9. Are all participants taking notes while planning?			
10. Are participants planning for next steps?			

(Mertler, 2014)

Appendix H

Marzano Unit Planing Checklist

42. Effective Scaffolding of Information within Lessons
Within lessons, the teacher prepares and plans the organization of content in such a way that each new piece of information builds on the previous piece.
Planning Evidence ❒ Content is organized to build upon previous information ❒ Presentation of content is logical and progresses from simple to complex ❒ Where appropriate, presentation of content is integrated with other content areas, other lessons and/or units ❒ The plan anticipates potential confusions that students may experience
Teacher Evidence ❒ When asked, the teacher can describe the rationale for how the content is organized ❒ When asked, the teacher can describe the rationale for the sequence of instruction ❒ When asked, the teacher can describe how content is related to previous lessons, units or other content ❒ When asked, the teacher can describe possible confusions that may impact the lesson or unit

43. Lessons within Units
The teacher organizes lessons within units to progress toward a deep understanding of content.
Planning Evidence ❒ Plans illustrate how learning will move from an understanding of foundational content to application of information in authentic ways ❒ Plans incorporate student choice and initiative ❒ Plans provide for extension of learning
Teacher Evidence ❒ When asked, the teacher can describe how lessons within the unit progress toward deep understanding and transfer of content ❒ When asked, the teacher can describe how students will make choices and take initiative ❒ When asked, the teacher can describe how learning will be extended

Planning Evidence
❒ Lesson and unit plans include important content identified by the district (scope)
❒ Lesson and unit plans include the appropriate manner in which materials should be taught (sequence) as identified by the district

Planning Evidence
❒ The plan outlines resources within the classroom that will be used to enhance students' understanding of the content
❒ The plan outlines resources within the school that will be used enhance students' understanding of the content
❒ The plan outlines resources within the community that will be used to enhance students' understanding of the content

Appendix I

UbD Design Checklist

Stage 1: Desired Results		
	Yes	**No**
Establish Goals:		
1. Only those standard(s) or goals that are directly relevant to the unit and assessed in Stage 2 are listed.		
Understandings:		
2. The *Big Idea(s)* are clearly stated and derived from or aligned with the unit's standards or goals.		
3. The *understandings* are both overarching (to promote transfer of *Big Ideas*) and topical (specific enough to focus teaching, learning, and assessment).		
4. The *understandings* are framed as full-sentence generalizations in response to the stem "Learners will understand that…"		
5. The *understandings* are not obvious or true by definition (i.e. factual knowledge). They need to be "uncovered" (not merely stated) in order for learners to come to understand them.		
Essential Questions:		
6. *Essential questions* clarify the *Big Ideas* and connect to other topics and contexts to guide inquiry into the topic.		
7. The *essential questions* are thought provoking and arguable, rather than "leading" questions that point to facts.		
8. The *essential questions* are written using appropriate language that makes them accessible to the learners.		
Learners will know:		
9. Key knowledge (including prerequisite knowledge) needed to meet the standards or goals and enable the desired understandings are identified.		
Learners will be able to:		
10. Key skills needed to meet the standards or goals are identified.		
Reviewer comments for Stage 1 – Desired Results:		
Stage 2: Assessment Evidence		
	Yes	**No**
11. The *assessments (authentic, diagnostic, performance, summative and formative)* are aligned with one or more desired results in Stage 1. They will yield appropriate evidence of the identified understandings.		
12. The tasks involve a complex, real-world (authentic) application of the identified knowledge, skill, and understandings, and require one of more of Bloom's learning objectives.		
13. The tasks are developed using the GRASPS guidelines.		
14. The variety of assessments evaluate the learner's understanding and allow for differences in learning styles, interests, and readiness.		
15. Learners are given the opportunity to self-assess and reflect upon their learning and performance.		

16. The scoring *rubric(s)* includes all appropriate evidence of understanding in alignment with desired results in Stage 1.			
Designer comments for Stage 2 – Assessment Evidence:			
Stage 3: Learning Plan			
		Yes	**No**
W	17. The learning plan makes clear to learners **what** they will be learning, **what** is expected of them (i.e. standards or goals) and how their work will be evaluated. Potential wrong understandings or skills are identified at the beginning.		
H	18. The learning plan is designed to **hook** learners--to grab their attention and motivate them, especially during the opening lessons and activities. students.		
E	19. The learning plan is designed to **equip** learners with the prerequisite **experiences** necessary to **explore** the *Big Ideas* and *Essential Questions*.		
R	20. Opportunities are provided for learners to **rethink** their prior and emerging understandings and to **revise** their work based on feedback and guidance.		
E	21. Learners are provided opportunities to **evaluate** and self-reflect on the progress of their learning.		
T	22. The learning has been **tailored** (personalized) to accommodate the variety of learner's interests, styles, and abilities by differentiating content, process, and products.		
O	23. The sequence of learning activities has been **organized** to maximize the learner's engagement and productivity.		

Adapted from: Wiggins, G. & McTighe, J. (2004). *Understanding by Design: Professional Development Workbook*. Alexandria, VA: Association for Supervision and Curriculum Development.

Appendix J

Open-Ended Interviews

The following script was used for the interviews with the selected dissertation-research participants. The same protocol was adhered to in all interviews to establish a better understanding of the participants' insights regarding instructional planning during common planning time.

The questions were selected to directly address the qualitative research questions driving this action research study:

Directions

Before

1. Remind interviewee that the interview should last approximately 30-45 minutes and that it is being recorded.

2. Thank interviewee in advance for supporting the study.

3. Remind interviewee of the purpose for this study and how we are here to help support teachers.

During

1. Conduct interview and spend more time watching and recognizing interviewee's body language, tone, level of comfort, than taking notes

After

1. Thank the interviewees for their time and insights and remind them that the information will remain confidential.

Open-Interview Questions

1. How is common planning time (PIRR) used to create or modify lessons and units of study?
2. Are lessons and units of study aligned with curriculum standards? If not, please explain.
3. Please include any other comments you would like to add regarding common planning time (PIRR) in your building and department?

Appendix K

Document Analysis Matrix

Open-Coding to Develop Categories to compare the documents	Department Meeting Agenda Documents	District Meeting Agenda Documents	Building Meeting Agenda Document	Existing Teacher Weekly Lesson Plans	Existing Content-Specific Unit Plans	District Academic Curriculum Documents
Used in Meeting						
Aligned Unit Objectives						
Essential Questions						
Instructional Strategies/Tasks aligned to curriculum standards						
Aligned Assessments						

The researcher employed a systematic procedure for reviewing and evaluating the documents in order to elicit meaning, gain understanding, and develop knowledge. The researcher will find, select, makes sense of, and synthesize the data in the documents (Bowen, 2009).

Appendix L

Analytic Memo Template

Date: Setting/Data Source:	Memos
Reflect on and write about how you personally relate to the participants and/or the phenomenon.	
Reflect on and write about your code choices and their operational definitions.	
Reflect on and write about emergent patterns, categories, themes, concepts, and assertions.	
Reflect on and write about the possible networks (links, connections, overlaps, flows) among the codes, patterns, categories, themes, concepts, and assertions.	
Reflect on and write about an emergent or related existing theory.	
Reflect on and write about any problems with the study.	
Reflect on and write about any personal or ethical dilemmas with the study.	
Reflect on and write about future directions for the study.	
Reflect on and write about the analytic memos generated thus far.	
Reflect on and write about the final report for the study.	

Note: Adapted from Banner, I. M. (2016). *Teachers' Perspectives and Development of Academic Rigor: An Action Research Study* (Doctoral dissertation). Saldana (2013)

Appendix M

Completed UbD Unit of Study Templates

Stage 1 – Desired Results

Content Standard(s): RL6.1/RL6.5/RL6.10

CCSS.ELA-LITERACY.RL.6.1
Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.

CCSS.ELA-LITERACY.RL.6.2
Determine a theme or central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments.

CCSS.ELA-LITERACY.RL.6.4
Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of a specific word choice on meaning and tone

CCSS.ELA-LITERACY.RL.6.5
Analyze how a particular sentence, chapter, scene, or stanza fits into the overall structure of a text and contributes to the development of the theme, setting, or plot.

Enduring Understandings: (Big Ideas)
Students will understand…

- Setting and conflict impacts how a character changes **(RL.6.1)**
- Authors make specific craft choices when writing novels **(RL. 6.4)**
- Writers use a variety of techniques to engage and persuade the reader. **(RL.6.4)**
- Analyze how a particular sentence, chapter, scene, or stanza fits into the overall structure of a text and contributes to the development of the theme, setting, or plot. **(RL.6.5)**

Essential Question(s):

1. How characters change because of setting and conflict? **(RL.6.1, RL.6.2)**
2. How are people transformed through their relationships with others **(RL.6.1, RL.6.2)**
3. Why do authors make certain craft choices (moves)? **(RL.6.4)**
4. How do the choices made by the characters in this novel reflect their varying perspectives? **(RL.6.1)**

Knowledge:
Students will be able to/can…

- Define key vocabulary terms specific to Tuck Everlasting? **(EQ 2/ RL.6.4)**
- Understand elements of literature: plot, character (antagonist/protagonist), theme, setting, conflict, and types of conflict **(EQ1/2/6.1/6.4)**

Skills:

Students will be able to/can…

- Students will analyze characters **(EQ1/.RL.6.1)**
- Students will make predictions about the plot/character actions **(RL.6.5)**
- Students will evaluate character's motivations and choices **(EQ2/RL.6.4)**
- Students will be able to identify foreshadowing, symbolism, and imagery in a story **(EQ 2/RL6.4)**
- Students will recognize character's differing perspectives **(EQ 3/ RL 6.1)**
- Students will compare two genres

Stage 2 – Assessment Evidence

Performance Task(s):	**Other Evidence:**
1. Mock Trial Performance	1. Vocabulary quiz **(EQ /RL.6.4)** 2. Journal entries **(EQ 1, 2/ RL.6.4)** 3. Class discussion/participation 4. Character trait/analysis chart **(EQ 1)** 5. Starred Chapter Questions

Stage 3 – Learning Plan

Learning Activities: (Write a brief description of each lesson plan/learning activity including what students will be doing, and the knowledge, skills, and dispositions students will be learning—please mention if the lesson is helping students complete the Core Performance Task of the unit)

Lesson 1 (2 Days) (EQ /RL.6.4):
Purpose: Introduction to Tuck Everlasting Unit.

1. **Procedure: Handout packets**
Hook: Intro to Tuck Everlasting **- *Immortality Activity*** – Would you want to live forever? Students will complete the Pro/Con or Pre-reading chart (we will decide at the next meeting.
Individual: Student will complete the chart and answer the questions in their notebook.
Group Discussion Students will compare their answers on the chart.
Whole-Class Discussion We will discuss responses as a class and teacher will record responses on the board/post-it note. This discussion will lead into the introduction to fantasy genre mini-lesson.

Mini-Lesson: Introduction to Fantasy Genre using the ReadWorks.org lesson in order for students to identify fantastical elements in a work of fantasy fiction. **(Students will understand, identify and explain the similarities and differences between fantasy and realistic fiction genre)**

Hook: Two students will play "two truths and a lie" for **realistic fiction**. Each student will share two statements that are true and one statement that is a lie. Teacher will direct students to think of a realistic or convincing lie so the class will have a difficult time guessing if the statement is a truth or a lie. The rest of the students have to guess which statement is the lie by asking "yes" or "no" questions. (List statements on chart paper – teacher and student lies- to be referenced later in lesson).

The Teacher will play "two truths and a lie" for **fantastical** statement. For example:

- My car broke down this morning.
- I love getting gifts for my birthday.
- I was born with small goat horns.

1. ***Whole Class*:** Teacher will ask which statement is a lie and explain how they know. Obviously, they will agree #3 is a lie because it is impossible – there is no such thing as a human with goat horns, except in Fantasy Fiction.

2. ***Whole Class***: Teacher will then define Fantasy Fiction (or ask students what they think the definition is of the term): and record the definition on the board/chart paper. Teacher will explain that some aspects of Fantasy are realistic, but what makes Fantasy unique are the *IMAGINATIVE, FANTASTICAL* elements.

3. ***Independently:*** Students will record the definition in their packet (fantasy fiction).

4. ***Whole Class***: Teacher will introduce the Fantasy Fiction genre to the class by *comparing and contrasting* it with Realistic Fiction. Teacher will make connection to the "two truths, one lie" opener by reviewing the lies from the student and teacher (students lie was realistic/teacher lie was impossible).

5. ***Group Discussion*** about Fantasy versus Realistic Fiction. Students will review the lies and try and determine the difference between Fantasy and Realistic Fiction and add more information in the organizer.

6. ***Whole-Class Discussion***: Teacher will chart students' responses about the differences/similarities and lead students to understand and define Realistic Fiction and Fantasy Fiction:

- Realistic Fiction (not real) includes fictional stories that seem realistic or possible
    - Fiction/believable characters/modern setting/events that can take place (realistic events)
- Fantasy Fiction has imaginary and fantastical elements where anything is possible and these fantastical elements are important to understand in this genre
    - Could not be real or true

7. ***Independently***: Students will record the definitions of realistic fiction fantasy fiction in their packets.

Lesson 2: Elements of Fantasy https://www.youtube.com/watch?v=V_ITIW4hBSQ
Purpose:

Hook:

1. ***Whole-Class Discussion:*** Teacher will use the *Elements of Fantasy: Popular Fiction Chart* to elicit a class discussion about the elements with students. Teacher will first chart the elements and ask students if they can think of any examples from a book or movie. Teacher can then reference the Popular Fiction Chart to continue the conversation with students. Teacher will

explain to students that all elements do not have to be included in a single story, but one or more is needed to be considered a fantasy.

- ***Magical objects, imaginary places, invented languages, nonhuman characters, myths, and good vs. evil plot line.***

2. ***Independently:*** Students will record the elements in their packets.

3. ***Whole-Class Discussion***: Teacher will model identifying fantastical elements by reading the first excerpt from **Fantasy Finder 1** and identifying a fantastical detail and then classify the detail under the appropriate fantasy element (ex: Unicorn-Non Human Creature). Teacher may also ask students to find the detail and element.

4. ***Independently***: Students will read the **Fantasy Finder 2** stories and try to identify the fantasy details and fantasy elements in their notebook. – can do second story as a do now next day/or end of class.

5. ***Group Discussion***: Students will share their information and each group will present their answers to the class for a whole-class discussion.

Transition to Protagonist/Antagonist Activity **(EQ /RL.6.4)**

1. ***Independently:*** Students will complete the **Good/Bad Characters Chart** and label the terms next to the appropriate description.

2. ***Whole-Class Discussion***: Teacher will conduct a discussion about student responses and determine if students were able to label the terms appropriately.

3. ***Independently***: Students will identify and label good and bad characters from familiar movies and come up with their own **Protagonist/Antagonist** characters from a book or movie of their choice. Students will try to define the two terms on their own using the previous material and tasks.

4. ***Whole-Class*:** Teacher will discuss the characters and student definitions of the terms to ensure all students have correct definitions.

Lesson 3: Author's Craft (*Why do authors make certain craft choices (moves*)? **(RL. 6.4)**

Purpose: Students will gain an understanding of how the author's use of imagery and symbolism allow the reader to understand the meaning of the book.

Hook: Students will watch video clips about imagery and symbolism and come up with their own definition of the two literary devices.

1. ***Whole-Class Discussion:*** Teacher will introduce authors craft to students to determine their background knowledge. Teacher will ask students:

a. ***What literary devices do authors use when writing a story?***

2. ***Small-Groups***: Students will discuss the answer to the question with their group and then present to the class.

3. ***Whole-Class Discussion***: Teacher will record student responses on the board and direct students to get their next Introduction to Author's Craft sheet out of the bin and complete the activity.

4. ***Independently:*** Students will use their chromebooks to watch the three videos on imagery, symbolism and theme and complete the graphic organizer.

5. ***Small-Groups***: Students will discuss their notes with their group and then present to the class.

6. ***Whole-Class Discussion***: Teacher will conduct a discussion about the videos and student responses and ensure all terms are defined appropriately.

7. ***Independently***: After the whole-class discussion, students will independently answer the Essential Question (***why do authors use literary devices?***)

Wrap-up: ***Whole-Class***: Teacher will review the Identifying Literary Devices in Tuck Everlasting organizer with students and explain that they are to identify and explain imagery/symbolism as they read the book. They will identify themes at the end of the book.

Lesson 4*:* (2 Days) Intro to Tuck Everlasting using RLMS Library Project

Purpose: Students will research what life was like in the 1800's based on school, homes, city life versus country life, transportation, cooking, clothing, and music and compare it to life today. This will give students a perspective on the setting of Tuck Everlasting, which is vital to understanding the story.

Hook: Teachers will tell students they will get to use their chromebooks to conduct research on life in the 1800's through videos and text and to compare how tat time is different from their lives today.

1. ***Whole-Class*:** Teacher will show the site to students and have a brief discussion about TE

2. ***Independently: S***tudents will compare and contrast the 1800's with today and record their observations in their notebook (focusing on ***homes/cities/school/transportation/cooking/clothing/music***)

3. ***Small-Groups:*** Students will discuss their comparisons and then each group will present to the class.

4. ***Whole-Class Discussion*** about the comparison between 1800's and today.

5. ***Independently***: Students will answer the following prompt:

a. Based on your research, explain what you think it was like to live in the 1800's as a 6th grader. Use the information from your research to help answer the question and be sure to compare the 1800's with your life today.

Lesson 5: Begin Reading Tuck Everlasting

- **Prologue**
- **Read Chapter 1 Focuses on Setting**
- **Complete green chapter questions and discuss as a class**

Lesson 6:

- Introduce Main idea chapter titles
- Vocabulary – meaning to tuck and remembering
- Chapter discussion questions – green sheets
- Class Read Chapters 2, 3, 4

Lesson 7: Read 4, 5, 6

11/22/2019: Each chapter needs following tasks after reading:

1. Main Idea Chapter title
2. Comprehension Questions and Questions aligned with the performance task mock trial (performance task questions)
3. Living Forever Chart
4. Author's Craft Chart
5. Vocab Lists Before Reading

Lesson 8: Read 7,8,9

Lesson 9 Read 10,11,12

Comparing Tuck/Fosters Homes – After Chapter 10 & 11
Lesson 10 Read 13, 14 ,15

Lesson 11 Read 16, 17, 18

Lesson 12 Read 19, 20, 21

Lesson 13 Read 22, 23, 24

Lesson 14 Read 25 and Epilogue

Lesson 15: Preparing for Tuck Everlasting Mock Trial

Purpose: Students will understand key components of a Mock Trial and review the description of each role before choosing their role.

Hook: Students will watch videos that depict the flow of a mock trial and select their roles.

Whole-Class:

1.Teacher will conduct a whole-class discussion about a court trial to determine student background knowledge and clarify any misconceptions.

2. Teacher will give an overview of all roles and explain the tasks involved with each role and answer clarifying questions students have about roles.

3.Teacher will show students videos about the overall purpose and procedures of a trial. This will give students an idea of public speaking skills and the behavior that they should display during the trial.

a. Overview Video Stop at 4:54

4. Teacher will conduct a brief discussion about video and behavior. Teacher will review roles and graphic organizers with students in more detail before students choose their top two roles.

Students:

1.Will review the graphic organizers and role descriptions.
2.Will take a google survey to request their top two choices for a role. **Role Survey**

Teacher:

1.Hand-out role descriptions and review graphic organizers with students
2.Determine and assign student roles based on survey results.

Lesson 16: Performance Task; Tuck Everlasting Mock Trial

Purpose: Students will synthesize what they learned from reading TE and defend whether Mae Tuck is guilty of murder or if she is innocent. Students will use support from the book to persuade the jury. Students will answer the essential questions (*How are people transformed through their relationships with others?6.1-6.2 and How do character choices reflect their different perspectives? 6.1)*

Hook: Students begin gathering their evidence will choose a role and participate in a Mock Trial to determine if Mae Tuck is guilty of murder.

Day 1:

***Whole Class*:**

2. Teacher will review each role with students and then create a google form survey and share with students so they can choose their two roles. Teacher will then give out roles to specific students and explain each individual role in detail and explain the overall purpose of the trial.

Independently/Small Groups: Students will review their role and graphic organizer to determine what they need to do to prepare for the trial. Each role has a different task and specific graphic organizer. Students will review the murder charges against Mae Tuck and Mae Tuck's Plea before beginning their organizers.

1. 2 District Attorney (meets with Mae Tuck and witnesses and watches opening/closing video)
2. 2 Defense Attorney (meets with witnesses and watches opening/closing video)

    a. Opening Statement
    b. Closing Statement
3. 1 Mae Tuck (meets with District Attorney)
4. 4 Witnesses (meets with attorneys)
5. 1 Reporter (meets with witnesses/attorneys)
6. 8-10 Jury Members (Depending on class size) (work as a group)

Day 2 - Day 4: Gather the Evidence

***Independently/Small Groups*:**

1. Students will work on completing each step in their rough draft graphic organizers. Because each role has specific steps, students will be working at their own individual pace. For example, there are two defense attorneys in each class. The two attorney's will work together to complete their graphic organizers, create interview questions, and conduct interviews with witnesses.
2. Students will complete their final draft organizer in order to be prepared for the trial.

Progress Monitoring: Teachers will move from student to student or small group to assist with any questions or steps students may need assistance with throughout the two day process. Necessary adjustments will be made as needed.

Day 5 and Day 6: Mock Trial

Whole-Class: The class will be arranged to represent a courtroom. The teacher will be the judge and preside over the case. The judge will begin by hearing the opening statements from the district attorney and the defense attorney.

Independently/Pairs/Small-Group:

District and Defense Attorney's

1. District Attorney's will begin by presenting their opening statements
2. Defense attorney's will present their opening statements.
3. Each attorney will call their first and second witness and ask questions
4. Attorney's will ask any final clarifying questions
5. Both attorneys will present their closing statements

Jurors

1. Each member will use organizer to take notes about:
    a. opening statements
    b. witness question responses
    c. closing statements
    d. Present the verdict to the court and the evidence that supports the verdict

Witnesses

1. Each witness will be called to the stand and must be prepared to answer questions from the district attorney and the defense attorney.
2. They can use their graphic organizer to help them recall some of their information.

Mae Tuck

1. Mae Tuck will present to her attorney the evidence that helps support her plea.

2. She will take notes during the trial to help find incorrect information that will help her case and her attorney.

Reporter

1. Pre-trial paragraph
2. The reporter will take notes on both days of the trial
3. Interview any witnesses and attorneys after each day
4. Take notes during the trial
5. Create a new article for the first day of the trial giving an overview of what happened
6. Create a news article for the second day of the trial that focuses on the verdict

Whole-Class:

1. Students and teacher will participate in the mock trial.
2. Teacher and students will have a whole-class discussion at the conclusion of the trial and discuss the theme of the book and how it connects to the decisions made during the trial (verdict/plea/etc.)

Independently:

1. All students will take notes during the trial using index cards.
2. Students will complete their reflection assessment.
3. Students will hand in all organizers.

use index card during trial so kids can write down new information and use this for their final reflection

Assessments:

1. Rough Draft Organizers Points__15_____
2. Final Draft Organizer/News Articles/jury Paragraph Points_ 15_____
3. Final Unit Questions (Theme/Author's Craft/Perspective) Points 10_____
4. Student Reflection Points 10

Student Reflection

How did the trial change your idea about theme?

Reflection:

Based on your role:

- ❑ What allowed you to be successful at trial
- ❑ How could you have improved and been better prepared
- ❑ Why was understanding the characters perspective important in your success in the trial?
- ❑ How has your initial opinion about Mae changed because of the trial - preparing for trial - has it changed?
- ❑ How could the trial have been better for you/ How could you have been more effective in the trial?

Unit Topic: Weather and Climate **Grade level: 6 Science**
Length of Unit: 4 Weeks

<table>
<tr><th colspan="2">Stage 1 – Desired Results</th></tr>
<tr><td colspan="2">Content Standard(s):
What factors interact and influence weather and climate?
This unit is based on MS-ESS2-4, MS-ESS2-5, and MS-ESS2-6 NGSS Standards</td></tr>
<tr><td>NGSS Standards
ESS2.C: The Roles of Water in Earth's Surface Processes

ESS2.D: Weather and Climate

RST.6-8.1
RST.6-8.7</td><td>Crosscutting Concepts
Cause and Effect (MS-ESS2-5)
▪ Cause and effect relationships may be used to predict phenomena in natural or designed systems
Energy and Matter (MS-ESS2-4)
▪ Within a natural or designed system, the transfer of energy drives the motion and/or cycling of matter
Systems and System Models (MS-ESS2-6)
▪ Models can be used to represent systems and their interactions – such as inputs, processes and outputs - and energy, matter, and information flows within systems.</td></tr>
<tr><td>Enduring Understandings: (Big Ideas)
Students will understand…
▪ Weather and climate are influenced by interactions involving sunlight, the ocean, the atmosphere, ice, landforms, and living things. These interactions vary with latitude, altitude, and local and regional geography, all of which can affect oceanic and atmospheric flow patterns.

▪ Weather can only be predicted because these patterns are complex.

▪ The ocean exerts a major influence and climate by absorbing energy from the sun, releasing it over time, and globally redistributing it through ocean currents.</td><td>Essential Question(s):

❑ What are the processes involved in the cycling of water through Earth's systems? MS-ESS2-4

❑ What is the structure of the Earth's atmosphere? MS-ESS2-4

❑ What is the relationship between the complex interactions of air masses and changes in weather conditions? MS-ESS2-5

❑ What are the major factors that determine regional climates? MS-ESS2-6</td></tr>
</table>

Knowledge:
Students will be able to/can…

- ❏ Define key vocabulary terms for the unit **(EQ 1,2,3/ESS2-4, 5 & 6**)
  - ❏ *Water cycle, condensation, rain, transpiration, evaporation, runoff, streams, groundwater, ocean, atmospheric moisture, glaciers, clouds, layers of atmosphere, air pressure (H/L), jet stream, isobars, fronts*
- ❏ Explain the water cycle process **(EQ 1/ESS2-4).**
- ❏ Explain what makes weather and what causes it to change within the layers of the atmosphere **(EQ2/ESS2-5)**
- ❏ Describe the characteristics of each layer of the atmosphere **(EQ2/ESS2-5**)
- ❏ Determine the relationship between air masses and changes in weather **(EQ2/ESS2-5**).
- ❏ Describe the major factors that determine regional climates (EQ 3/**ESS2-6**)
- ❏ Understand there are different variables that affect weather production (heat/moisture) **(EQ 3/ ESS2-6**)

Skills: *Students will be able to/can…*

- ❏ Develop and describe a model of the water cycle process **(EQ 1/ESS2-4).**
- ❏ Identify and create a model of the layers of the atmosphere **(EQ2/ESS2-5)**
- ❏ Plot temperature and altitude coordinates of the layers of the atmosphere **(EQ2/ESS2-5)**
- ❏ Observe an Air Pressure Lab and make predictions **(EQ 2/ESS2-5).**
- ❏ Use an online virtual lab application to learn about the layers of atmosphere and air pressure **(EQ 2/ESS2-5).**
- ❏ Predict weather patterns and create a new weather forecast. **(ESS2-4, ESS2-5, ESS2-6)**
- ❏ Locate the different air mass regions in the United States **(EQ 3/ESS2-6**).
- ❏ Analyze and predict weather patterns based on regional climates **(EQ 3/ESS2-6**).

Stage 2 – Assessment Evidence

Performance Task(s):

1. **Weather and Climate Forecasting Project MS-ESS2-1, ESS2-2, ESS2-4, ESS2-5, ESS2-6 RST.6-8.7**

2. **Student Weather Forecasting Project Video MS-ESS2-1, ESS2-2, ESS2-4, ESS2-5, ESS2-6**

Other Evidence:

1. Model of water cycle process **(MS-ESS2-1/ESS2-4)**
2. Water Cycle Gizmo **(MS-ESS2-1/ESS2-ESS2-4)**
3. Model of Layers of the Atmosphere **(MS-ESS2-5)**
4. Layers of Atmosphere Quiz **(MS-ESS2-4 ESS2-5)**
5. Key Terms Activity (*Water cycle, condensation, transpiration, evaporation, runoff, percolation, precipitation, ocean, atmospheric moisture, glaciers, clouds, layers of atmosphere, air pressure (H/L), jet stream, isobars, fronts)***(MS-ESS2-1/ESS2-4)(MS-ESS2-5)**
6. Atmosphere Virtual Lab **(MS-ESS2-5)**
7. Air pressure lab and graph **(MS-ESS2-5)**
8. Clouds slideshow and quiz **(MS-ESS2-1/-ESS2-4)**
9. Birthday Weather Map **MS-ESS2-1, ESS2-2, ESS2-4, ESS2-5, ESS2-6**

Stage 3 – Learning Plan

Learning Activities: (Write a brief description of each lesson plan/learning activity including what students will be doing, and the knowledge, skills, and dispositions students will be learning—please mention if the lesson is helping students complete the Core Performance Task of the unit)

Lesson 1: Introduction to Water Cycle EQ1/MS-ESS2-1 MS-ESS2-4

Purpose: This is an introduction to the weather and climate. This first lesson is designed to get students to ask questions about the phenomena (water cycle) and then conduct research about their questions. This will lead into a class discussion on key water cycle terms and understandings based off of student-created questions.

Hook: Watch the video in order to present the phenomena (We are still drinking the same water from when dinosaurs roamed the Earth). This will allow students to generate questions about the phenomena https://www.youtube.com/watch?v=EzgRJwTuo6s

1. Review and have students complete QFT questioning technique to generate questions regarding the Water Cycle
2. ***Categorize*** questions Open/Close and by topic. Each group will choose the best questions to research using chromebooks (RLMS databases/Google Search), in order to gain more background knowledge about the phenomena
3. Each group will create a shared google doc and make sure each student uses a different font color as they conduct their research

Day 2: Complete Research

1. *Continue and complete student research*
2. ***Whole-Class Discussion*** about research: round robin to each group to chart important findings and vocabulary terms about the water cycle they came across in their research.
3. Ask students if they found scientific terms in their research that connect to the water cycle: **Post on board** to review in the next lesson (ex: evaporation/precipitation). Prompt students with questions, if needed.

Lesson 2: **Key Vocabulary for the Water Cycle (2 Days) (EQ 1 /ESS2-4)**

Purpose: This lesson is a continuation of the first lesson.

Hook: Tell students they are going to act out new vocabulary terms. They will create a skit, use paper and markers, and act out the words without saying anything! Teacher will model this with a random word so students understand what is expected of them.

1. Review the list of vocabulary words and see if there are any additional to add based on student research
2. Grouped students: pass out one term to each group and have them create short one-minute presentation to the class (paper diagram) harder words/easy words modification depending on group
3. Class presentation: have each group present their word with matching sound and body movements to the class– create a picture/diagram. Other students will try and figure out which vocab word is being presented. TERMS: *Water Cycle*, *Condensation/Precipitation/Evaporation/Percolation/Transpiration/Runoff*
4. Teacher will hand out an outline of water cycle diagram without terms and have students try and label the diagrams with correct terms. Review terms with students
5. ***Assessment (Day 2***): Students will *create* their individual water cycle model labeled with the appropriate terms using their neighborhood/Fairfield, CT as frame of reference. **MS-ESS2-1 MS-ESS2-4**

Lesson 3: ***Student Exploration: Water Cycle: Gizmo Activity*** **(EQ 1/ESS2-1 & 4)**

Purpose: Students will gain further background knowledge about the water cycle. This lesson will allow students to gain a visual of the water cycle process before constructing their own model of the water cycle. Students will be introduced to key water cycle terms and explanations.

***Hook*:** Teacher will explain to students they will use a new technology app on their chromebook to learn about the water cycle. Students will be engaged with the use of a new technology application.

1. ***First***, students will be introduced to the Gizmo App and complete the Water Cycle activity. This will allow students to develop a deeper understanding of the scientific background to the water cycle process. Students will also be exposed to a new technology skill and application (Gizmo).

2. Once completed, students will work in their groups to review their answers, identify discrepancies, and have a conversation about any differences in answers. This will allow students to determine where further clarification is needed rather than the answers being given to them.

3. ***Whole-Class Discussion***: Teacher and students will discuss discrepancies in answers to come to the "correct" answer.

4. Students will then view a short (6-minute) video on the water cycle process and take notes on any new information they learn – this will prompt the discussion after the video. This video brings all of the content together from the first three lessons.
    - ❑ https://www.youtube.com/watch?v=oaDkph9yQBs

5. ***Whole-Class Discussion***: Teacher will conduct a class discussion about the information students recorded from the video.

    - ❑ Teacher will ask students, ***what are the processes involved in the cycling of water through Earth's systems?*** **MS-ESS2-1 MS-ESS2-4**
    - ❑ Students will try to answer the question by thinking about what they learned about the water cycle. This will lead/transition students to the layers of the atmosphere. Students should understand that the water cycle is a part of weather and how weather changes.

Lesson 4: **Introduction to the Layers of the Atmosphere Lesson (EQ 2/ESS2-5)**:
Purpose: Students will understand what makes weather and what causes it to change by the end of this lesson.

Hook: The teacher will explain to students that the atmosphere is made up of different layers and that they are going to play a card sort game to identify the layers of the atmosphere and what occurs in each layer using their prior content and vocabulary knowledge. (10 - 15 Minutes)

1. ***Whole-Class***: Teacher will hand out the bags of descriptors to each student and the atmosphere matrix. Teacher will tell students to turn the cards face up and try to arrange the cards under the layer of the atmosphere.

    a. Students will work on the card sort independently

2. ***Progress Monitor***: Teachers will walk around to students to ensure some progress is occurring/support students who are struggling.

3. ***Pair/Group Discussion***: Teachers will direct students to turn and talk to their partner to explain the placement of their cards in order to help them justify their ideas and learning to listen to others. Make any changes they want to make.

4. ***Whole-Class Discussion***: Teachers will conduct a class discussion by selecting students to present their card placement and justification. The teacher will not give correct answers to students. When discussion is done, the teacher will hand out the matrix answer key to students so they can check their answers.
5. ***Independently***: Students will check their card placement answers using the matrix answer key. They will highlight their correct responses on the answer key so they can see how many they got correct. The answer key will serve as a study guide for the formative assessment (LOA Quiz). Students will try the same card game at the end of Atmosphere lessons.

6. When this part of the lesson is complete, students will place the cards back into the Ziploc bag and they will use the answer key matrix to help them complete the next activity in the lesson.
7. Teacher will end the lesson by showing the atmosphere video (or begin the next lesson with the video depending on time).

    a. https://www.youtube.com/watch?v=3CerJbZ-dm0

Lesson 5: Layers of the Atmosphere Graph (EQ 2/ESS2-5)

Purpose: This lesson is an extension of the previous introduction lesson to the layers of the atmosphere. Students will gain an understanding about the different layers of the atmosphere and identify specific characteristics of each layer. Students will learn that we live in the troposphere and understand the relationship between altitude and temperature in the 5 layers of the atmosphere.
***Hook*:** Students will view a youtube video about a jet flying through the atmosphere as an introduction to the new lesson - layers of the atmosphere.

1. ***Whole-Class***: Teacher will review recap student responses from the atmosphere video and explain to students they will create a model of the layers of the atmosphere by completing a graph.
    a. **Step 1**: Handout the **blank LOA graph** and review the graph and questions with students (draw attention to negative numbers/Temp/Altitude). Students must use pencil.

2. ***Independently***: Students will complete the ***LOA Graph***, answer the four questions, and label the graph.

    a. ***Remind students they are to use the LOA answer key from the previous lesson to help them with the labeling of the graph.***

3. ***Progress-Monitor***: Teacher will circulate room, monitor student progress, and make any necessary adjustments.

4. ***Whole-Class***: When students are done, the teacher will project a graph with the coordinates plotted and have a brief conversation about the labeled layers to ensure students labeled the layers correctly. Teacher will hand out the list of additional information to be labeled on the graph.
    a. **Step 2**: Handout the **LOA Graph Information (Rubric)** sheet and review with students before they begin. They begin this sheet **after** they complete plotting the coordinates on the graph.

5. ***Independently***: Students will label the graph with the additional items on the handout.

6. ***Whole-Class***: When students are done, the teacher will project a completed graph and conduct a class discussion about the different layers of the atmosphere.

7. ***Independently*:** Wrap-up (**formative assessment**): Students will answer the following questions:

a. What is the relationship between altitude and temperature in each layer?
b. How does temperature change in the atmosphere?
c. How is the atmosphere divided?

Lesson 6: Atmosphere Virtual Lab (EQ 2/ESS2-ESS2-5)

Purpose: Students will gain a deeper understanding of each layer of the atmosphere using a Glencoe on-line virtual lab. Students will identify 8 phenomena and in which layer of the atmosphere they are located.

Hook:

1. ***Whole Class:*** Teacher will review the virtual lab packet and directions with students and show them where to access the link (RLMS Library Page)

2. ***Independently:*** Students will complete the **Atmosphere Virtual Lab and answer all of the questions in the packet.**
   http://www.glencoe.com/sites/common_assets/science/virtual_labs/ES14/ES14.html

3. ***Whole Class***: Teacher will review the answers to the lab and conduct a class discussion about the temperature in each layer and how it is affected by altitude.

4. ***Independently*** :Students will answer the comprehension questions using the lab information (maybe in a google doc - they can make a copy and put in science folder.)
   Atmosphere Virtual Lab Comprehension Questions

5. Students will answer the Essential Question: ***What is the structure of Earth's atmosphere? (To be answered at the end of the Atmosphere lessons)***

This will lead into the lesson on clouds and weather – (maybe end with focusing on layer where weather is and how clouds are also in this layer)

Assessment: Lab answer sheet and comprehension questions

Lesson 7: Air Pressure Lab (EQ 2/ESS2-5)
Air Pressure Lab Sheets Air Pressure Graph
Purpose: Students will make a personal connection to how much air weighs and how much air pressure pushes against them at sea level. This will allow students to gain a deeper understanding of air pressure and its impact on life on earth (troposphere) and that air pressure decreases in every layer of the atmosphere.

Hook:

1. ***Whole-Class***: Teacher will the air pressure lab process to students. Students will use graph paper to recreate and determine the amount of air pressure that exists on their hand at sea level.

2. ***Independently***: Students will trace their hand on 1 x 1" grid paper and shade in their hand

and use the formula to calculate how much air pressure is exerted on their hand.

3. ***Whole-Class***: The teacher will review the student answers to the lab questions and make necessary corrections, if needed.

4. **Assessment:** Graph and answers to the lab questions. Students will predict how many pounds of air is pressing on their hand and answer in a complete sentence in the following format: if...then...because)

Lesson 8: ***Clouds***: **(2 Days) MS-ESS2-1 MS-ESS2-4**
Purpose: Students will identify four different types of clouds and explain how they are part of the water cycle and weather: ***What are the processes involved in the cycling of water through Earth's systems?*** **Focus Question***: **How can specific cloud types help meteorologists forecast the weather?***

Hook: Teacher will tell students they are going to plan the clouds lesson and become teachers.

1. ***Whole-Class:*** Teacher will show students the introduction video to clouds. By the end of the lesson, students will be able to explain how clouds are part of the water cycle, what clouds tell us, and what clouds are. This will lead into the individual activity in the next step of this lesson.
   - ❏ https://www.pbs.org/wgbh/nova/labs/video_popup/3/19/
2. ***Individually***: Students will take notes on the introduction video and identify characteristics of clouds. Clouds Note Resource

3. ***Whole-Class***: Teacher will lead a discussion about the video and the connection between the water cycle and the formation of clouds.

4. ***Individually:*** Students will read the transcript of the video, highlight important information about clouds, and create a google slide show presentation of the different types of clouds. Students will present their presentation to their small groups.

Day 2: Continue creating slide show. Students will use slideshow as a study guide for their vocabulary assessment.

Presentation Must Include: (I will Create Rubric)
1. Title Slide
2. 5 Types of Clouds and their classification (low/middle/high)
3. **Shape**: How the Classification helps to forecast weather
4. Image of each cloud
5. **Create an audio**: Tell a story about how a low cloud moved up into the atmosphere from warm to colder temperatures and changed as it moved higher. Be sure to include all clouds and details of each cloud (they way it looks and how the water content changes).
6. Last Slide: **Answer the focus question:** ***How can clouds help meteorologists (and you) predict the weather?***

Small Groups: Students will present their slide show and other group members will take

notes/add to their slide show, if needed.
The teacher will monitor each group, help struggling students, and ensure the information is accurate.
Whole-Class: The teacher will review information with students and ensure all students have correct information.
Assessment: **Cloud Quiz**: Students will have to define the clouds and label them on a diagram based on the appropriate characteristics. Students will predict weather based on the cloud shape and level (low middle high).

Lesson 9: (**5 Days**) **Weather Forecasting Project: ESS2-4, ESS2-5 & ESS2-6**.
EQ: *What is the relationship between the complex interactions of air masses and changes in weather conditions?*

Purpose: Culminating unit project – bringing it all together. Students will understand the correlation between elevation and temperature by analyzing different types of maps. Students will **analyze maps** in order to **draw conclusions** about weather **patterns** and be able to make **predictions** about different weather. Students will understand how isobars, isotherms, high and low pressure, regional fronts, sea level pressure, clouds and jet streams allow meteorologists to determine weather patterns and predict weather. Students will strengthen their **listening and following directions skills throughout this project.**

Hook:

1. ***Whole-Class***: Teacher will explain the project to students by viewing the Weather Google Project site. Teacher will explain to students that the information they learn from this project will be applied to the performance task. Students will take on the perspective of a meteorologist and forecast a three-day sequence of weather and explain why this weather is occurring based on all they have learned about weather and climate from the start of the unit.
    - ❏ https://sites.google.com/fairfieldschools.net/6thgradescienceweatherunit2017/collaborative-work
2. ***Independently:*** Students will conduct their research by following the directions and steps in each section of the google site project and record their information in the appropriate organizers.

3. ***Pair-Share***: At the end of each section, students must discuss their findings with another student before have a class discussion.

4. ***Whole-Class***: After each section, and after the **pair-share** discussions, the teacher will conduct a whole-class discussion about the answers to the questions in the section. Teacher will modify for struggling students when necessary. Students will be paired appropriately.

NOTE: This lesson will and the above steps will continue for a five-day sequence. Each teacher may move at a different pace depending on students.

Assessment: The teacher will collect and grade student packet at the end of the project and monitor students throughout the lesson.

Lesson 10: Birthday Map Model: ESS2-4, ESS2-5 & ESS2-6
Birthday Map Directions

Purpose: Students will develop an understanding about how weather is impacted by specific components (warm/cold fronts/high/low pressure/jet stream/weather symbols/compass rose). Students will understand weather symbols, be able to read map information and explain how weather on the west coast impacts weather on the east coast. Students will gain and understanding from the information in order to be able to explain the major factors that determine regional climate **(EQ/MS-ESS2-6)**

Hook: Teacher will explain to students they are going to research what the weather was like on the day they were born using the weather underground site.

Whole-Class: Teacher will review the weather underground site with students. Teacher will research her/his birthday using the Weather Underground link to show students an example of what they need to do during the lesson. The weather underground link will be placed on the RLMS Library Homepage for students to access. Teacher will review the research organizer and explain the purpose of the research and what is expected of students at the end of the lesson (birthday map that includes all components).

Independently:

1. Students will use the weather underground site and their chromebooks to conduct their research.
2. Students will research the specific weather on the day they were born and the following five days.
3. The forecast will include the appropriate weather symbol and the high and low temperature for the five-day forecast.
4. Students will explain what each weather symbol represents and create a key that includes each symbol.
5. Students will research 10 cities throughout the US on the day they were born and record the information on their organizer and label the cities on the US map.

Whole-Class: When students are done, the teacher will review weather symbols, high and low temperatures of the 10 cities that were researched, and review the map with labeled cities. Teacher will hand-out rubric for weather map model and review any questions students may have before they begin.

Independently:

6. Students will create a model of their birthday map with all components included (key/symbols/high and low pressure/warm and cold fronts).

Assessment: Graphic organizer and Birthday Map Model

Final Performance Task

Lesson 11: Student Weather Forecasting Performance Task: MS-ESS2-4, ESS2-5 & ESS2-6.

Purpose: Students will use all of their new knowledge and map skills gained from previous lessons in the unit to create a 3-day weekend weather forecast that includes all the elements of the unit (water cycle, layers of the atmosphere, clouds, isobars, jet streams, high and low pressure)

Hook: Teacher will explain to students that they will take on the role of a meteorologist and create a one-minute weather forecast video using all of the elements learned throughout the unit.

1. ***Whole-Class*:** Teacher will explain the expectations of the weather forecast video to students. The teacher will share the weather symbols template to students using google drive. Students will use the symbols to help create their weather slideshow and video.
2. ***Pairs*:** Students will create a one minute weather forecast video. The forecast must look like the one you would see on TV. Create a 3-day weekend weather forecast explaining how and why weather changes or stays the same as it moves.

Pairs: Students will work in pairs to create the weather forecast.

December-May

June - November

Weather Forecast Template

Appendix N

Participant Weekly Reflections

Protocol

Your individual reflection should be on-going and frequent throughout the research process. Your entries should be a minimum of 1 per week and will guide weekly meetings/discussions. The reflections should capture your thinking and address the following points:

(a) Changes in your thinking regarding your planning, instruction and assessments.
(b) The process of collaboration during the professional development intervention.
(c) Challenges or questions that are arising during this work.
(d) Other points you want to discuss.
Please include the date at the end of each entry.

The focus for this week is…
Changes in my thinking regarding planning, instruction and assessments have been…
The process of collaboration during the professional development intervention has been….
Challenges or questions that have and are arising for me during this work have been/are…
Other thoughts you want to discuss…

Note: Adapted from Banner, I. M. (2016). *Teachers' Perspectives and Development of Academic Rigor: An Action Research Study* (Doctoral dissertation).

Appendix O

Professional Development Unit Planning Process Reflection

Pre-Reflection	Thoughts, codes, categories
Describe your current process for planning and designing your units of study. Address the following: a) Your decisions about the final assessment in the unit, b) Your decisions about the activities and task sequence, c) Your decisions about how you create formative assessments, d) How you unit plan is aligned to curriculum standards.	
Are there any aspects of your planning for and designing your units that you feel are positive? Challenging?	
Additional comments:	

Teacher Subject

Post-Reflection	Thoughts, codes, categories
How does your current process for planning and designing your units of study compare to the UbD training process? Address the following: e) Your decisions about the final assessment in the unit, f) Your decisions about the activities and task sequence, g) Your decisions about how you create formative assessments, h) How your unit plan is aligned to curriculum standards.	
Are there any aspects of your planning for and designing your units that you feel are positive? Challenging?	
Additional comments:	

Note: Adapted from Banner, I. M. (2016). *Teachers' Perspectives and Development of Academic Rigor: An Action Research Study* (Doctoral dissertation).

Appendix P

Professional Development Planning Meeting Teacher Assessment

Five Levels of Professional Development Evaluation				
Evaluation Level	**What Questions Are Addressed?**	**How Will Information Be Gathered?**	**What Is Measured or Assessed?**	**How Will information Be Used?**
1. Participants' Reactions	Did you like using common planning time to create an aligned unit of study? Was our meeting an effective use of planning time? Did the UbD template/frame work make sense to you by the end of the planning process? Will the UbD framework be useful to you in the future? Was the leader knowledgeable and helpful?	Questionnaire at end of iteration	Initial satisfaction with the experience	To improve the program design and delivery
2. Participants' Learning	Did participants acquire the intended Knowledge and skills in order to backwards plan (UbD)?	Reflection (written)	New knowledge and skills of participants (final unit plan assessment/checklist)	To improve program Curriculum alignment at the building level

Does It Make a Difference? Evaluating Professional Development. Thomas R. Guskey, 2013

Appendix Q

Table 14: *Needs Assessment Triangulation Matrix*

Research Question	Data Strand 1	Data Strand 2	Data Strand 3, 4	Data Strand 5	Data Strand 6	Data Strand 7
1.What curriculum components do middle school teachers use when planning units of study?	Teacher and administrator survey **Questions based on lit review and needs assessment*	Building/Depart. Observation Field Notes (LA/Science) District Observation Field Notes (Science)	3. Build/District Behavior Checklist 4**.** Marzano Checklist	Secondary Sources Lesson/Unit Plans District Doc (LA/Science) Depart. Meeting Artifacts (LA/Science) District Mtg. Artifacts (Science)	Open-Ended interviews (LA/Science)	Meeting Minutes (building, district/LA& Science)
2.How is common planning time used by teachers to plan instruction?	Teacher and administrator survey	Building/Depart. Observation Field Notes (LA/Science) District Observation Field Notes (Science)	3. Build/District Behavior Checklist 4**.** Marzano Checklist	Secondary Sources Lesson/Unit Plans District Doc (LA/Science) Depart. Meeting Artifacts (LA/Science) District Mtg. Artifacts (Science)	Open-Ended interviews (LA/Science)	Meeting Minutes (building, district/LA& Science)
3.How are existing units of study aligned with curriculum standards?	Teacher and administrator survey	Building/Depart. Observation Field Notes (LA/Science) District Observation Field Notes (Science)	3. Build/District Behavior Checklist 4**.** Marzano Checklist	Secondary Sources Lesson/Unit Plans District Doc (LA/Science) Depart. Meeting Artifacts (LA/Science) District Mtg. Artifacts (Science)	Open-Ended interviews (LA/Science)	Meeting Minutes (Building, district/LA& Science)

Appendix R

Table 15: Iteration 1 and 2 Triangulation Matrix

Research Question	Data Strand 1	Data Strand 2	Data Strand 3	Data Strand 4	Data Strand 5	Data Strand 6, 7	Data Strand 8	Data Strand 9	Data Strand 10
4.Does Understanding by Design framework impact teachers' ability to align a unit of study?	Scored Marzano Unit Planning Matrix	Completed UbD unit plan template and scaffolded lesson plans	Pre and post teacher reflections regarding professional development instructional planning	Teacher focus group interviews Content specialist focus group interviews	Researcher reflection log (analytic memos)	6. Scored Marzano Unit Planning Rubric LA Science 7. Marzano Planning Checklist	UbD Unit Planning Checklist LA Science	PD Feedback LA Science	Completed UbD unit template and lesson plans LA Science
5. Does the Understanding by Design transform teachers' capacity to design a unit plan of study?	Participant Pre-reflection log LA Science	Participant Weekly Reflection Log LA Science	Planning Meeting Minutes LA Science	Focus group interviews LA Science	Researcher reflection log LA Science			PD Feedback LA Science	Complete UbD unit template and lesson plans LA Science

Appendix S

Initial Contact E-Mail to District Central Office Administrator

March 2019

RE: Dissertation research

Dear Chief Academic Officer:

For the last four years, I have been working with teachers to improve instructional planning strategies in order to increase student problem solving skills in all content areas. It is through this work with my colleagues that has motivated me to assist them in improving the process of constructing unit plans through sustained professional development.

For my dissertation research, I would greatly appreciate your support in conducting an action research study that stems from a willingness to support the district's efforts in improving professional development that focuses on creating and developing instructional unit plans aligned to curriculum standards. With this in mind, I plan to collect data by using an anonymous survey which will be distributed to building content teachers, content specialists, and building administrators regarding current instructional planning time practices. In addition, semi-structured interviews will be conducted with the study participants (sixth grade teachers) to allow me to explore the current instructional planning practices at the department, building and district level from the teacher perspective. Additionally, and with volunteer teachers, I will employ a professional development workshop over a six-week period that uses the backward design unit planning model to develop curriculum-aligned units of study in math, science, and language arts. The unit plans will be assessed using the Marzano Unit Planning Rubric.

To ensure this research does not interfere with the district's efforts to educate students nor interfere with morale of the district's staff, the data and findings will be confidential, and all identities will remain disclosed.

I am hoping you will grant me permission to support the district through this study. For additional specific information, please refer to an overview of the study *Participant Information Guidelines & Consent*, attached.

Respectfully,

Parthena Proskinitopoulos

Appendix T

Initial Contact E-mail to Building Principal

March 8, 2019

RE: Dissertation Action research project

Dear Building Principal:

For the last four years, I have been working with teachers to improve instructional planning strategies in order to increase student problem solving skills in all content areas. It is through this work with my colleagues that has motivated me to assist them in improving the process of constructing unit plans through sustained professional development.

For my dissertation research, I would greatly appreciate your support in conducting an action research study that stems from a willingness to support the district's efforts in improving professional development that focuses on creating and developing instructional unit plans aligned to curriculum standards. With this in mind, I plan to collect data by using an anonymous survey which will be distributed to building content teachers, content specialists, and building administrators regarding current instructional planning time practices. In addition, semi-structured interviews will be conducted with the study participants (sixth grade teachers) to allow me to explore the current instructional planning practices at the department, building and district level from the teacher perspective. Additionally, and with volunteer teachers, I will employ a professional development workshop over a six-week period that uses the backward design unit planning model to develop curriculum-aligned units of study in math, science, and language arts. The unit plans will be assessed using the Marzano Unit Planning Rubric.

To ensure this research does not interfere with the district's efforts to educate students nor interfere with morale of the district's staff, the data and findings will be confidential, and all identities will remain disclosed.

I am hoping you will grant me permission to support the district through this study. For additional specific information, please refer to an overview of the study *Participant Information Guidelines & Consent*, attached.

Respectfully,

Parthena Proskinitopoulos

Appendix U

Interview Contact E-Mail to Selected Participants

March 2019

RE: Dissertation

Dear Colleague:

As part of my doctoral studies at the University of Bridgeport under the direction and guidance of Dr. Tom Christ, I am conducting my dissertation, which is an action research study that will explore how public middle school academic teachers (language arts, math, or science teachers in grade six) use common planning time to design lesson and unit instructional plans that are aligned with curricula standards. It will also incorporate professional development to assist teachers to use backward design unit planning to construct lesson and unit plans.

I am hoping that you, as a selected member of our profession, will permit me your insight into this concept, and would volunteer to participate in this study. This will include responding to semi-structured questions that permit you the freedom to elaborate as much as you see fit, and to discuss and review previous lesson plans that you have created as part of your daily planning that may support your responses. It will also require (if you so choose) you participating in instructional planning professional development using the backward design model of unit planning. Please note that your participation is strictly voluntary.

During and following this process, your identity will not be disclosed. However, I will be digitally recording the interviews so that I can transcribe them to help to improve current instructional planning practices. In addition, I will be observing your department, building, and district meeting planning time, and will be bound by confidentiality.

Should you need to contact me, my email is: pproskin@my.bridgeport.edu

If you agree to participate, allow me to thank you for offering your time and insights in advance. For additional specific information, please refer to an overview of the study *Participant Information Guidelines & Consent*, attached.

Sincerely,

Parthena Proskinitopoulos

Appendix V

Teacher Survey Contact E-Mail to Participants

March, 2019

RE: Dissertation Action research project

Dear Colleague:

As part of my doctoral studies at the University of Bridgeport under the direction and guidance of Dr. Tom Christ, I am conducting an action research study that will investigate the current instructional planning process at the department, building, and district level. The purpose of this study is to identify and implement a professional development intervention that assists teachers, content specialists, building administrators, and curriculum leaders to effectively align units of study with curriculum standards in science, math, and language arts at the middle school level.

I am hoping that you, as selected member of our profession, will permit me your insight by participating in a short on-line survey that will take approximately 5-10 minutes to complete, including additional thoughts. Please note that your participation is strictly voluntary.

During and following this process, your identity will not be disclosed. I will be compiling your responses to organize the information I collect from multiple respondents.

Should you need to contact me, my email is pproskinitopoulos@fairfieldschools.org

The link to the teacher on-line survey is https://www.surveymonkey.com/r/9XQG8S5

If you agree to participate, I thank you for offering your time and insights in advance.

Respectfully,

Parthena Proskinitopoulos

Appendix W

Administrator Survey Contact E-Mail to Participants

March 2019

RE: Dissertation Action research project

Dear Administrators:

As part of my doctoral studies at the University of Bridgeport under the direction and guidance of Dr. Tom Christ, I am conducting an action research study that will investigate the current instructional planning process at the department, building, and district level. The purpose of this study is to identify and implement a professional development intervention that assists teachers, content specialists, building administrators, and curriculum leaders to effectively align units of study with curriculum standards in science, math, and language arts at the middle school level.

I am hoping that you, as selected member of our profession, will permit me your insight by participating in a short on-line survey that will take approximately 5-10 minutes to complete, including additional thoughts. Please note that your participation is strictly voluntary.

During and following this process, your identity will not be disclosed. I will be compiling your responses to organize the information I collect from multiple respondents.

Should you need to contact me, my email is pproskinitopoulos@fairfieldschools.org

The link to the administrator on-line survey is https://www.surveymonkey.com/r/T6JY6PC

If you so kindly agree to participate, allow me to thank you for offering your time and insights in advance.

Respectfully,

Parthena Proskinitopoulos